

# **SECTION 1**

## **The Planning Process**





**SECTION 1**  
THE PLANNING PROCESS

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Success in the planning, design, and construction or renovation of court facilities is largely dependent upon the decisions made in the initial stages. This section begins with a discussion on how to organize the planning stage and progresses to an explanation of the components of an architectural program. The program is key to a responsive design process which is defined according to the four stages recommended by the American Institute of Architects (AIA). While this document is intended to define guidelines for the design of court facilities, different construction methods and management techniques are summarized to illustrate the range of choices available to users. Finally, the importance of choosing the appropriate financing method early in the planning process is discussed. This section is intended to inform the user of the ways to organize a capital project for the best results.

## 1.1 FACILITY PLANNING AND DESIGN PROCESS

Long before architects can begin drawing lines on paper that represent the bricks, mortar, steel, and glass of a new courthouse, there are a series of “pre-design” steps that must be accomplished if the finished design is to reflect the needs of the courts and the dignity of justice.

The typical court facility project includes five phases: master planning, design, bidding, construction, and occupancy. The following provides an overview of each of the typical planning and design stages, beginning with preparation of a needs assessment and evaluation of current facilities, as part of the Master Planning Phase, through design, construction, and occupancy. The road is not always a straight one, and there may be many starts and stops along the way; even going back and starting over. Changing conditions, growth rates, and operational environment (as well as funding problems) all may necessitate revisions to the original plan and require additional planning. It is essential, however, that the planning stages of the project not be side stepped. Changes at this point in the project are relatively inexpensive, while changes and alterations later on during design and even construction are much more expensive. Many jurisdictions contract with a court consultant in the early stages. A court consultant is often helpful in identifying innovative design and operational methods to improve court services.

Figure 1-1  
Project Phases and Tasks



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Master planning covers the initial assessment of current facility deficiencies, usually as part of the preparation of a needs assessment done either in-house by the court, by a local funding body, or by an outside consultant. Master planning progresses through an evaluation of existing facility resources, an estimate of current and future space needs, consideration of one or more alternative solutions, and perhaps the preparation of a detailed facility program. Usually this results in the preparation of cost estimates necessary to obtain financing support.

Design takes the information developed in the earlier stage and begins to develop possible solutions, usually presented as schematic drawings and various design concepts. As design progresses, it becomes more detailed at each succeeding step and concludes with the development of construction documents that are the basis for obtaining construction bids. A useful step at this point in the project is



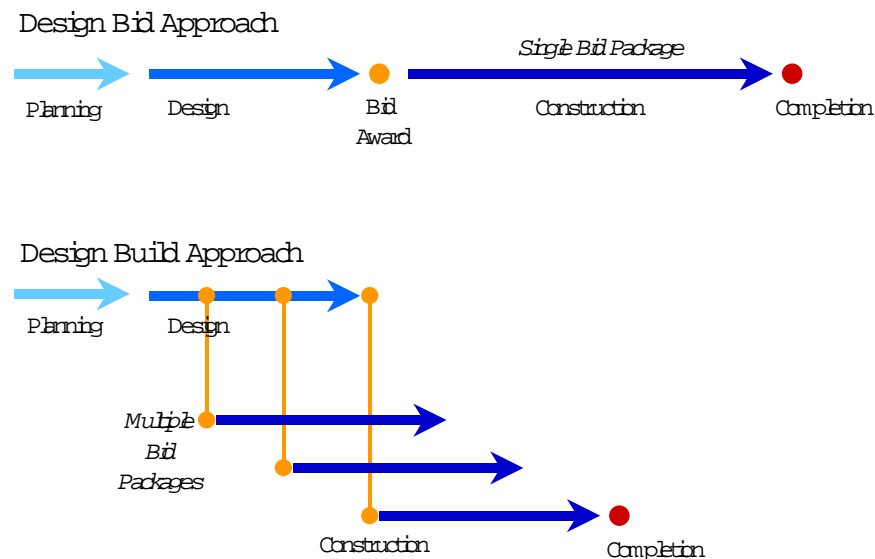
value engineering where all aspects and assumptions of the project are scrutinized and challenged to find ways to improve the design and perhaps reduce costs without sacrificing function and operational ability.

The bidding stage is another opportunity to evaluate the design. Construction firms present bids based on their review and understanding of the construction documents. These are reviewed and a contract is awarded. Often this is a time of anxiety on the part of the funding body or bodies, who are wondering whether the bids offered are within budget. But even if bids are “over budget,” a detailed review of the bids and negotiations with the contractors often produces further adjustments that will bring construction costs more in line with previous estimates.

Construction also involves continuous decision-making on the part of the funding authority. Currently, most jurisdictions employ a construction manager to see that the project remains on schedule and within budget. Changes to the original design are processed through “change orders” to ensure that all changes to the final construction documents are approved. In the latter stages of construction, a final process of inspection and acceptance of the building and a close out of the project is performed jointly by the contractor and the construction manager before the users occupy the building.

After the Certificate of Occupancy or Beneficial Occupancy is awarded by the municipality or county and before moving into the new facility, each office needs to do considerable planning. Courts and offices will operate and function differently in the new facility. New procedures and processes will need to be carefully considered and developed, especially for the security staff. Understanding how to operate the new facility, how traffic will move through the building, and how to move prisoners will be essential and should be worked out before hand.

Figure 1-2  
Project Schedule Comparison



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The order of these planning stages is not immutable; local circumstances may require variation in the traditional order of events. Sometimes programming is done as part of the design process instead of being included in the master-planning phase, depending upon the need for an early estimate of project costs in



order to secure funding support. Opportunities should be considered for “fast tracking” projects by collapsing and overlapping the traditional phases. However, this requires a high degree of supervision and management on the part of those responsible for project management.

### **1.1.1 Getting Organized**

Most projects commence with recognition on the part of the users and owners that existing facilities have become inadequate. Either the court has outgrown the facility, the building(s) are deteriorating, or judicial functions and operations have so changed that the building once designed for a particular set of operations no longer is able to support efficient court functions.

Preliminary evaluations are often required in the early stages of getting organized. The building needs to be evaluated in terms of its physical integrity, the condition of the several building systems (electrical, heating, ventilation, air conditioning, plumbing), the functionality of the courthouse for physically-challenged staff and visitors, and the facility’s ability to support the efficient operations of the courts and its related offices. These early investigations may be done by court staff with the aid of outside experts or with the assistance of materials such as these guidelines. A cooperative effort between the court and the funding authority generally leads to a more effective evaluation. One of the first steps should be the creation of a planning or project committee that can meet regularly and that can begin to assemble the necessary information for evaluating the present facility.

In the Appendix (Section A5) of these guidelines a self-evaluation checklist developed by the National Center for State Courts (NCSC) is shown. This tool can be very helpful in the early identification of major spatial issues that the committee will need to address. During the initial stage of the planning process, a variety of data will be necessary.

Among the types of information that should be collected are:

- Current space utilization and square footage assignments
- Physical condition of the facility
- Workload growth and estimates of future changes in personnel
- Examples of existing deficiencies and problems with the building
- A preliminary estimate of current and future (5-10 year) space requirements

### **1.1.2 Who Should Participate?**

This committee should be composed of representatives of the major interested offices and departments, which occupy the courthouse. These typically include some or all of the following, or their respective representatives:

- Chief Judge(s)
- One or more judges representing the different courts or court divisions
- Clerk
- Court Administrator(s)



- Major court-related agencies, including probation, prosecutor, friend of the court, and law enforcement
- Local or county offices housed, or to be housed, in the courthouse
- Bar association
- Representative of the public
- Local government funding units

A workable decision-making mechanism needs to be developed regardless of the size of the committee. One option would be to allow less impacted agencies to participate in committee deliberations but without a vote on decisions. Other possibilities include the formation of a smaller executive or work group with authority to conduct the business of the committee between full committee meetings or the formation of subcommittees that report to a small committee which would make final decisions. Whatever the most effective method of decision-making, the court and other building users must have constructive input into the planning and design process throughout the project.

#### *1.1.2.1 Project Manager*

A project manager/coordinator who is familiar with facility planning and project management should be appointed to manage the daily responsibilities, but key court personnel should retain a central role in all phases of the planning. As the project progresses from needs assessment through programming and design, the position of project manager may become full-time, depending upon the size of the project.

The need for cooperation between the various parties and user groups represented on the committee cannot be over-emphasized. The project manager should ensure that there is effective communication not only among the members of the committee but also from the members to their respective agencies.

#### *1.1.2.2 Functions of the Committee*

During the initial phases of a project when the committee may be charged with preparing a needs assessment, the committee should assemble information on the existing conditions of the courthouse, including a description of the present facilities, an inventory of the number and types of spaces within the courthouse, such as courtrooms, offices, jury and public areas, etc., and identify the approximate area of each.

A detailed description of current problems, inadequacies, deficiencies, and bottlenecks should be prepared. Members of the committee or their representatives should be able to compile much of this essential information. Non-committee members, such as operating personnel and local attorneys, may be interviewed by committee members.

#### *1.1.2.3 Selecting Consultants and Creating the Project Team*

During the project, the services of a number of different types of consultants and experts may be beneficial, including security consultants, court facility planners, acoustical engineers, handicapped accessibility consultants, and traffic planners. For projects involving historic buildings, preservation specialists may need to be included on the project team.



Attention should be given to the make up of the project design team. The design of a new courthouse, or the renovation of an existing building, should enhance operational efficiency, enhance the decorum and dignity of the court, and provide a safe and comfortable work environment. Most functional errors in the design of a courthouse arise from the failure to adequately understand the courts' special needs and to incorporate the users' points of view in the planning process. The design team should be knowledgeable as to the operation of courts and be experienced in the planning and design of courthouses. The National Center for State Courts ( Website: [www.ncsc.dni](http://www.ncsc.dni) ) maintains a list of firms with experience in planning and designing court facilities.

The best way to structure a design team varies with the complexity of the project. A strong local architectural firm, if teamed with a specialist in court planning, can produce excellent results, while a combination of local and national design teams also can be effective, particularly in larger projects. Some local governing bodies are committed to supporting local businesses and deliberately seek to ensure that the major portions of a design project will be performed by (and fees paid to) a local architect. In such cases, specialized expertise is used only to augment the local firm. Other jurisdictions advertise nationally, wishing to attract large, or high-profile, out-of-town firms. In combining with local firms on a joint-venture design team, high-profile firms may either take a subordinate role or perform as dominant partners, depending on particular circumstances of the project.

Regardless of how the planning and design team is assembled, it is important that it contain a cost estimator, a security specialist, an acoustical engineer, and an electronics/audio visual consultant. Increasingly, many design teams now include "technology planning specialists" to assess issues of court operation, technology, and building systems.

Whichever preference prevails, it is important that the selection process promotes an informed choice among competing teams. Firms wishing to compete for a court design project should be judged on the basis of:

- Design strength for institutional or private-sector buildings with comparable character
- Organizational and management strength with respect to projects of comparable size and complexity
- Specific experience of individuals to be assigned to the project
- In-house subcontractor and consultant disciplines and qualifications
- References--specifically related to individuals assigned to the project
- Schedule and cost control mechanisms and history
- Specific technical expertise, use of computer assisted-design, work approach, and management methodology
- Overall team chemistry and "fit" with project staff

### **1.1.3 Preparing the Request for Proposal and Selecting an Architect**

When the time comes to hire an outside consultant, planner, or architect, it is common practice to request proposals from qualified firms or individuals. This may be a group of previously identified firms that are considered qualified to do the work or it may be done through advertising in local or regional newspapers





or trade journals. One way to identify potentially qualified architects, consultants, or planners is to find out who has done similar work in other communities or even nationally. At this point, a list of potential firms may be obtained by visiting the American Institute of Architects' website at [www.e-architect.com](http://www.e-architect.com) or by contacting the National Center for State Courts ( Website:[www.ncsc.dni](http://www.ncsc.dni) ) which maintains a list of various consultants familiar with court facility planning and design. In Appendix (Section A8), additional information on the architectural agreements is presented.

The next step is to prepare a Request for Proposals (RFP) to send to potential firms. It is important when preparing an RFP that it clearly defines the project and the product that is desired. If it is a master plan, it should be clear that the final product or report contain:

- An evaluation of current facilities
- Current space utilization
- An analysis of workload and growth forecasts
- An analysis of current and future staffing and judgeship needs
- Current and future space requirements
- Alternative planning options for meeting space needs
- Preliminary cost estimates, and
- A site analysis (if not already done)

The RFP should clearly state the desired qualifications, the form that the proposal should take, and how the proposals will be evaluated. Through the RFP process, the court could require that operational issues that may affect the possible facility solutions be examined. Examples of such issues are the possibility for the court to divide its operations (civil / criminal / family), the operation of satellite facilities, and the effect of new technologies, such as video conferencing, document imaging, and internet communications. Any of these changes could affect the size, form, and location of the facility and should be addressed through the RFP process.

When the time is correct to engage a design team, the nature of the desired product should be better defined. However, depending upon the amount of planning that has been accomplished previously, the scope of the services may vary. The biggest item to consider is the need to do architectural programming before initiating the design phase. The program can be done separately from the design phase or may be included as an integral part of the overall design effort. The potential bidders should be informed of the manner in which programming will be accomplished since this impacts both the fee and the type of consultants required. One advantage of developing the architectural program separately is that the programming consultants could continue to serve as consultants to the owners during the design phases by performing design reviews and assuring compliance with the program.

While the RFP process is the most common, a "Request for Qualifications" (RFQ) approach may be used to pre-screen qualified teams. Generally speaking, RFQ submissions request the following:

- A description of the participating firms (on larger projects several firms may join together to bid on a project)
- Individuals who will be assigned to the project, their qualifications (resumes), and a portfolio of the firms' design work



- Examples of other similar projects they have completed

As with the RFP process, the RFQ should clearly identify what is to be submitted, the form in which it should be submitted, and how the teams will be evaluated.

Typically anywhere from 10 to 20 responses to an RFP or RFQ may be received, depending on the size of the project and the extent to which it is advertised. While in rare instances the final selection may be made from among the written submissions, selecting three to five teams to interview is a better practice generally. At this point, the selection team should consist of a mixture of building users (courts and other offices) and the local governing body.

In the Appendix, a copy of a generic RFP and RFQ is shown to provide an indication of the format and information that is often requested through this process.

## **1.2 NEEDS ASSESSMENT**

Whether performed exclusively by the court or as part of a more formal effort directed by the local government funding unit, one of the first steps in the planning process should be the preparation of a needs assessment. This initial step attempts to examine the current conditions of the existing court facilities, develop estimates of the court(s) current and future need for space, and assesses the current facility's ability to accommodate those needs. The needs assessment can be prepared by a project planning committee, or the funding authority (or court in some instances) may wish to hire a consultant or facility planner.

Since any facility improvements should be effective for many years, a estimation of future needs should be prepared considering projected increases or decreases of caseloads and population, anticipated jurisdiction changes, if any, and the consequent personnel and space needs. During this phase of the planning the court needs are determined through the establishment of general objectives, specifying the type and number of spaces needed to meet present and future needs; e.g., how many courtrooms, of what types, number of judges' chambers, juror facilities, public facilities, offices, record keeping and storage space, corridors, etc. will be needed. Then using the space requirements included in these guidelines, the committee should make a preliminary estimate of the gross space that will be needed.

In projecting future needs, the court should consider procedural and administrative changes that may improve case flow management and record keeping, such as calendaring practices, improvements in staff utilization, increased use of computers and other technology, and improved record keeping storage.

Good statistical skills are required to forecast future need. Larger jurisdictions may have this expertise on staff as part of a planning department. Smaller jurisdictions may need to engage the services of a consultant or utilize other resources such as colleges, universities, and the Michigan SCAO.

### **1.2.1 Forecasting and Determining Needs**

Determination of future court facility needs is not a simple matter. One approach is to ask each department head for the following:

- An estimate of the amount of space and number of personnel required in the department
- The additional space needed to properly accommodate the current personnel and workload



- The anticipated growth in workload and personnel for the next 15 to 20 years
- The space that will be required to accommodate the anticipated growth

This approach, usually referred to as the Delphi method, assumes the ability of the department head and building users to make reasonable projections.

Different courts, departments, and agencies are likely to experience different rates of growth or decreases in workload, so weighted caseload techniques may be necessary. Short-range forecasts, based on present projections may be sufficiently accurate, if based on adequate information and not projected too far into the future. Because public buildings are generally expected to last for extended periods of years, more sophisticated techniques are often required. Forecasting is a complex science and should be undertaken by those with sufficient technical expertise to know how to select an appropriate forecasting technique and interpret the results. This is another area in which the use of a qualified planning consultant is advisable.

It must be emphasized that caseload forecasts are not statements of actual resource needs but only represent predictions of future court activity, given present information and assuming that current trends and practices continue unchanged.

Forecasts are based upon the following broad assumptions:

- The data are reliable and their definitions have remained consistent throughout the study period
- Past trends contained in the historical data will continue into the future
- There are no extreme outside factors affecting the court such as legislative changes altering jurisdiction or judicial procedures

### **1.2.2 Methodology**

There are three basic forecasting techniques generally used in forecasting court caseloads. The first is qualitative, the second is based upon historic caseload trends, and the third makes use of other independent variables.

The first and most well known of the qualitative techniques is the Delphi method, mentioned above, in which a group of "practitioners" makes estimates of future caseloads. All participants are shown the results of the first round of estimates and are offered the opportunity to change their initial estimates. The process continues until consensus is achieved.

The second method for predicting future caseload (and probably the most often used) is the use of historic caseload data to construct a trend line. Past case filings are plotted and a trend is extended into the future. A basic assumption is that whatever factors influenced caseloads in the past will continue to influence cases in the future.

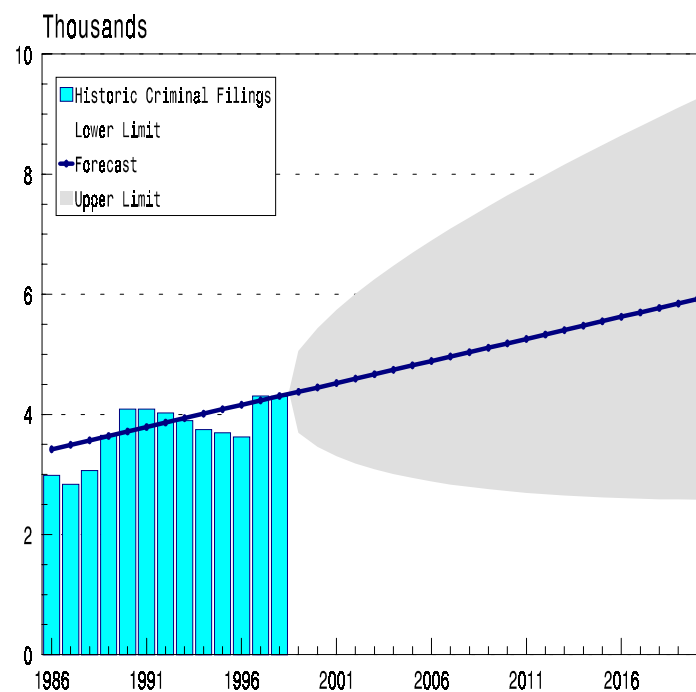
The third category of analysis is the use of independent variables, such as population, crime rates, per capita income, or unemployment rates, to forecast caseloads. The value of particular variables, however, varies by case type. For example, economic variables might be good predictors for some civil case types, while the number of law enforcement officers may be a good predictor of misdemeanor filings. One problem with most such variables is the difficulty in obtaining consistent historic data for projecting factors, such as per capita income or unemployment rates, far enough into the future to be helpful. Even if such data were



available, the process of identifying sound and appropriate correlation for various case types is both difficult and time consuming.

A number of possible projection trends may be considered for each forecast, and the one presenting the “best fit” is selected. The value of using a trend line or regression analysis is that a confidence interval then may be calculated for each forecast. The solid line in Figure 1-3 represents the best forecast and the shaded area represents the confidence interval (to be interpreted as being 95% confident that the actual projected value will fall within the shaded area). The farther out in years the forecast, the wider the interval.

Figure 1-3  
Sample Forecast of New Criminal Cases



Forecasted using Exponential Smoothing. Shaded area represents 95% confidence interval.

### 1.2.3 Master Planning and Determination of Alternative Solutions

Once the determination has been made that changes need to be made to the existing facilities, the next step is the identification of alternative solutions. Early in a project, the option to renovate the existing facility with perhaps the construction of an addition or to build an entirely new facility may not be clear. During the master planning phase the form and nature of the project takes shape, involving a number of steps that typically include:

- Assessment of short and long-term needs
- Evaluation of existing facilities
- Evaluation of alternative solutions



- Preparation of an implementation plan

#### 1.2.3.1 *Assessment of Short and Long Term Needs*

This step consists of forecasting workloads and staffing, operations planning, and futures planning. The assessment of long term need depends upon a number of factors including, changes in operational philosophies, caseload/workload processing requirements, administrative practices and policies, security considerations, changing technological applications, changes in client populations, and the demand for services.

Long term facility planning starts with analytical forecasts of future caseload, personnel, and other key factors influencing space needs as discussed above. If this has not been previously completed in the project, or if more than a year or two has elapsed since forecasts were conducted, updates are appropriate at this point.

In order to better predict the future demand for judicial services and to develop appropriate operationally-based space standards, the court should review caseload management and calendaring philosophies, jury utilization and management, prisoner transport policies and practices, records storage and retention technology, and security and accessibility policies.

Standards regarding courtroom size, judges' chambers and other specific courthouse spaces should be based upon contemporary state and national standards presented in the appendixes.

Utilizing the forecast of future system factors, workload indicators, judgeship and staffing in conjunction with the specific space standards and assumptions regarding court operations, an overall projection of future space needs is made. These projections for each of the judicial system's components lay the foundation for the development of specific strategies for facilities improvement.

#### 1.2.3.2 *Evaluation of Existing Space*

The evaluation of current facilities is essential in order to determine which may be suitable, with renovation, for future use and which need to be replaced. Most judicial facilities become operationally obsolete as well as physically overcrowded with the passage of time; therefore, the examination should be both quantitative and qualitative in nature. Taken with the forecasts and operational assumptions performed previously, this analysis forms the second cornerstone of the plan for facility improvement.

The overall facility evaluation should also cover the analysis of specific functional spaces and elements in terms of security, circulation, public accessibility, handicapped access, proximity to other essential functions, use of imagery and symbolism, furnishings, and use of technology. Specific analysis should address relationships among functional components such as judicial and juror interactions with the courtroom; the relationship of judges' chambers to courtrooms, prisoner holding and movement; attorney, client, and witness interactions; and the movement and storage of court records. A number of evaluation tools have been developed by architects and planners that may be of use at this point in the project. As previously noted and included in the Appendix, the National Center for State Courts' publication, ***The Courthouse: A Planning and Design Guide for Court Facilities***, contains a self-assessment form that courts and localities may use to conduct their own evaluation of their facilities.

Besides the quality and quantity of functional spaces, the evaluation should cover the physical properties of the buildings, including such issues as structural integrity, systems' utility (such as HVAC, electrical, plumbing), life cycle costs, and code compliance.



### 1.2.3.3 *Alternatives to Address Space Needs*

Rarely does a project have only one solution but usually has a range of possible solutions, depending upon resources. To arrive at the most suitable recommendation, a number of alternatives need to be considered and analyzed in terms of their functionality and cost. The range of options available might include:

- Internal reconfiguration of spaces in an existing building
- Expansion of an existing building
- Conversion of an existing building to a judicial function
- Sale or demolition of an existing building
- Construction of a new building
- A combination of these options

Co-locating appropriate functions and providing for appropriate separation of others, within the physical limitations of buildings, should be given priority. Flexibility of future operations and expansion opportunities must be carefully considered.

The cost implications of the various strategic options are then considered. First, preliminary cost estimates are made of the different construction, renovation, or expansion alternatives. Second, associated project costs for architectural and engineering fees, furnishings and finishes costs, equipment budgets, site acquisition, contingency (unknown circumstances such as soil conditions) costs, and inflation factors need to be assigned. Third, life cycle costs (such as mechanical system or roof replacements) for retention of existing facilities versus probable new facilities ought to be considered.

### 1.2.3.4 *Development of the Implementation Plan*

Based upon the analysis in the preceding steps, a strategy is then devised to reconcile the court's projected needs with existing resources. The strategy includes the development of renovation and construction options, preliminary cost estimates, and perhaps plans for phasing the project through staged implementation.

The prior steps considered the strategic options given long-term needs and physical limitations, and assigned costs to those options. The implementation plan develops a specific series of incremental steps to enable the funding authority to address its long-term space needs for the judicial system in a comprehensive and systematic manner.

For instance, the decision to engage in new construction may be inevitable. One of the existing buildings may be immediately renovated to satisfy both short and long-term needs. Meanwhile, construction of a new facility may proceed. Another facility may receive little or no attention until another renovation or new construction project is completed, then is vacated and renovated.

Developing a systematic strategy for improving and or adding judicial facilities will enable the funding unit to maximize the effectiveness of capital expenditures and make improvements in phases in accordance with a comprehensive master plan.



## 1.3 THE PROGRAM STATEMENT

Architectural programming is essential to the design process regardless of the capital project being a single courtroom addition or a new 70-courtroom complex. This stage of the process affords the owners and users the opportunity to clarify visions, missions, and responses through the investment of time and limited funds for consulting services. As a product, the architectural program will combine narrative descriptions, tabular compilations of space assignments, and functional relationship diagrams. The intent of the program is to reflect the views of as wide a variety of the courthouse “stakeholders” as possible. As the process advances to schematic design and the subsequent stages, more definitive technical and graphic expertise is required. The development of a Program Statement is the time in planning a new or expanded courthouse to test operational and spatial concepts with a variety of agencies, managers, and individuals that will use the courthouse on a periodic or regular basis. The Program Statement that can serve as a reliable guide to the preparation of construction documents involves a three-step process with significant peer reviews occurring at two points. The more comprehensive the Program Statement, the more effective the design process. Therefore, careful attention to the three steps and the many task items can contribute to a design that eliminates future “surprises” and comments that “no one asked my opinion”.

In **STEP 1 – OPERATIONAL FRAMEWORK** is an interactive process with owners, users, and programmers defining in narrative terms the means and methods of managing the flow of litigants, participants, and records through the judicial process. This step offers many potential users of the courthouse an opportunity to voice needs and solutions. Although the design phases must establish the context of the courthouse within the physical environment, the development of the operational framework determines the critical relationships and the means of managing the flow of people and paper through the system and the actual physical facility.

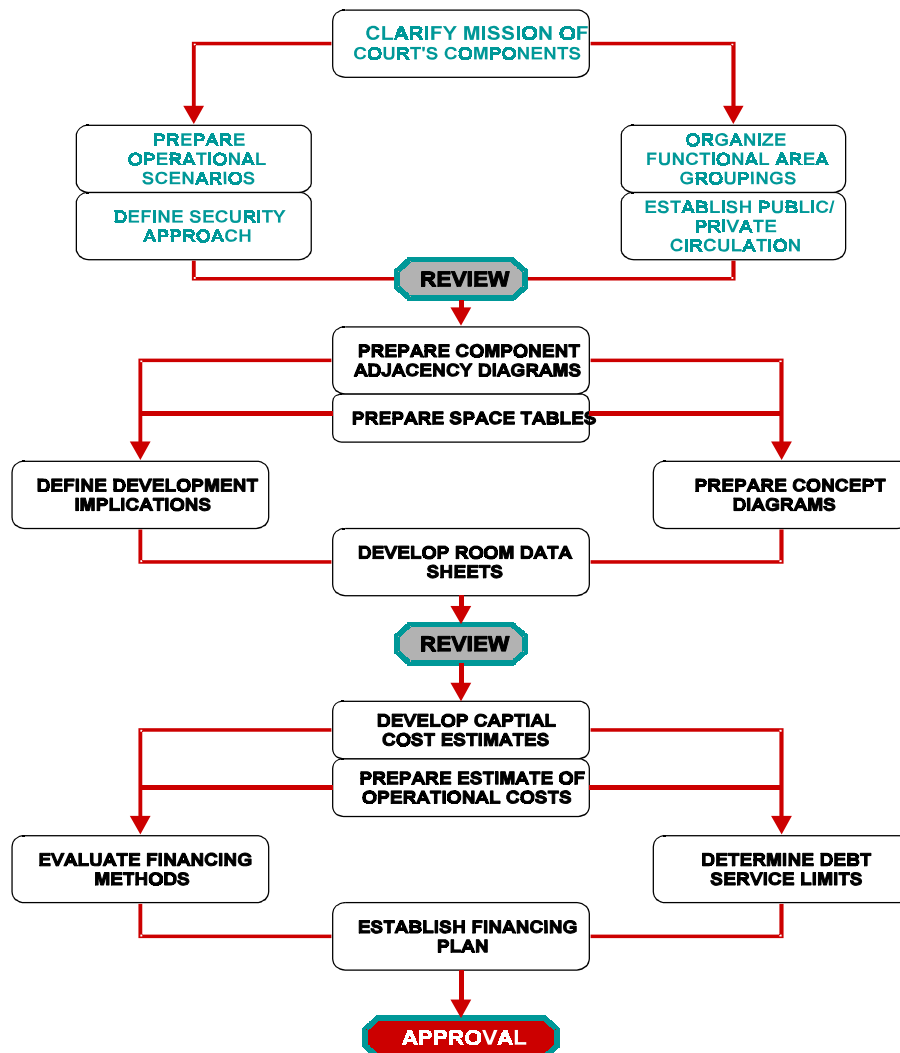
**STEP 2 - SPATIAL FRAMEWORK** translates the operational objectives into area assignments, functional relationships, and spatial descriptions. This step combines narrative descriptions with spatial tables and graphic diagrams that establish requirements for adjacencies. This step is closely aligned with the schematic design process in which the spaces and functional relationship diagrams evolve into a floor plan. The results of this step will be used by the architect to formulate a floor plan and ultimately prepare construction specifications.

With the description of the operational, spatial, and functional aspects of the courthouse established, **STEP 3 – FINANCIAL FRAMEWORK** establishes the first budget for the courthouse. Although this budget will be revised throughout the detailed design process, at the Program Statement phase a target budget can be identified along with methods of financing. The approval of Step 3 by the owners is a signal to the architect that a cost has been agreed upon which the design solution will be measured against.

Figure 1-4, following, this three-step process is illustrated as a simple flow diagram indicating the need to employ a logical and sequential process of arriving at a budget for a new or expanded courthouse. Following the figure, the various subtasks associated with these three steps are identified.



Figure 1-4  
Three Step Programming Process



### 1.3.1 Step 1 – Operational Framework

Through a series of group and individual meetings and workshops, the operational basis for the eventual design of the courthouse can be established. The temptation to excessively rely on the opinions of one or two key individuals (i.e., the Chief Judge, Clerk of Court, Court Administrator, etc.) should be avoided rather than establish a consensus-building process including a variety of stakeholders. As can be seen from the following list of tasks to be undertaken in defining the operational framework, the input of many stakeholders will be necessary.

- Define court's linkage to criminal justice system





- Clarify component responsibilities
- Determine management objectives by component
- Clarify facility-wide relationships between components
- Establish site planning implications
- Meet with component managers
- Prepare narrative descriptions
- Develop graphic flow diagrams
- Determine staffing approach
- Define degree of control, access, and response desired
- Establish security system component responsibilities
- Develop appropriate security response by facility component
- Establish general security equipment guidelines
- Prepare overall relationship options
- Establish performance criteria for each component
- Establish "time-of-operation" for each component
- Determine external (service) linkages to each component
- Define public and private movement patterns
- Establish prisoner circulation and holding plan
- Identify high volume areas with control plan
- Establish vertical circulation protocol

The conclusion of **Step 1** is a peer review at which time all of the key stakeholders should have the opportunity to comment on the resultant narrative description of the operational process intended for each component of the courthouse.

### **1.3.2 Step 2 – Spatial Framework**

The single most useful aspect of the Program Statement is the quantification of the size and spatial relationships that are defined through the tasks in Step 2. Most architects can design a functional building with an accurate table of spatial quantities and diagrams that establish the primary adjacencies of the major components. In small projects, Step 1 may be able to be condensed into Step 2 with "Comment Notes" on the space tables. To achieve a Program Statement that is an accurate depiction of operational and other factors, the following tasks should be addressed.

- Define relationships between components
- Establish internal versus external circulation linkages



- Determine internal component relationships
- Prepare accessibility matrix
- Develop blocking and stacking diagrams
- Establish space standards
- Prepare list of component spaces
- Define net square footage requirements per space
- Determine number of users (or units) per space
- Establish departmental grossing factors
- Establish building grossing factors
- Define totals by component
- Establish overall site area requirements
- Define parking and service requirements
- Determine number and location of building penetrations
- Test alternative site arrangement approaches
- Define relationship of building to surrounding land uses
- Establish overall facility site plan
- Test individual component arrangements
- Prepare courtroom layout concept approaches
- Organize concepts for more detailed architectural refinements
- Determine appropriate level of data required to support A/E design process
- Establish construction criteria for each space
- Define level of finishes for walls, floors, and ceilings
- Define physical and electronic security requirements
- Determine the general level of HVAC systems
- Define degree of fixed versus moveable furnishings and equipment

There are various methods to present the tabular assignment of spaces and functional relationship diagrams. In Figure 1-5 on the next page, a sample space allocation sheet illustrates a method of presenting the space assignments where a space designation number and name are given along with any appropriate space standards. The net area is assigned to the space based upon intended use, with brief comments providing any special features. Once a component has been sized, a departmental grossing factor is added to the net area to account for unassignable space such as corridors, wall thickness, and mechanical shafts. This “departmental grossing factor” typically ranges from 15 to 50 percent of the net space, depending on the size of the net areas, the amount of corridors to serve the spaces, and/or the



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amount of area for mechanical shafts. At the conclusion of the entire spatial program, another grossing factor is added to account for elevators, emergency stairs, and other areas that support the entire building. The “building grossing factor” ranges from 5 to 25 percent, based upon the stage of planning. Once more detail has been completed on the site, number of floors, and type of construction, the building gross factor can be more specifically defined.

**Figure 1-5**  
**Sample Space Allocation Table**

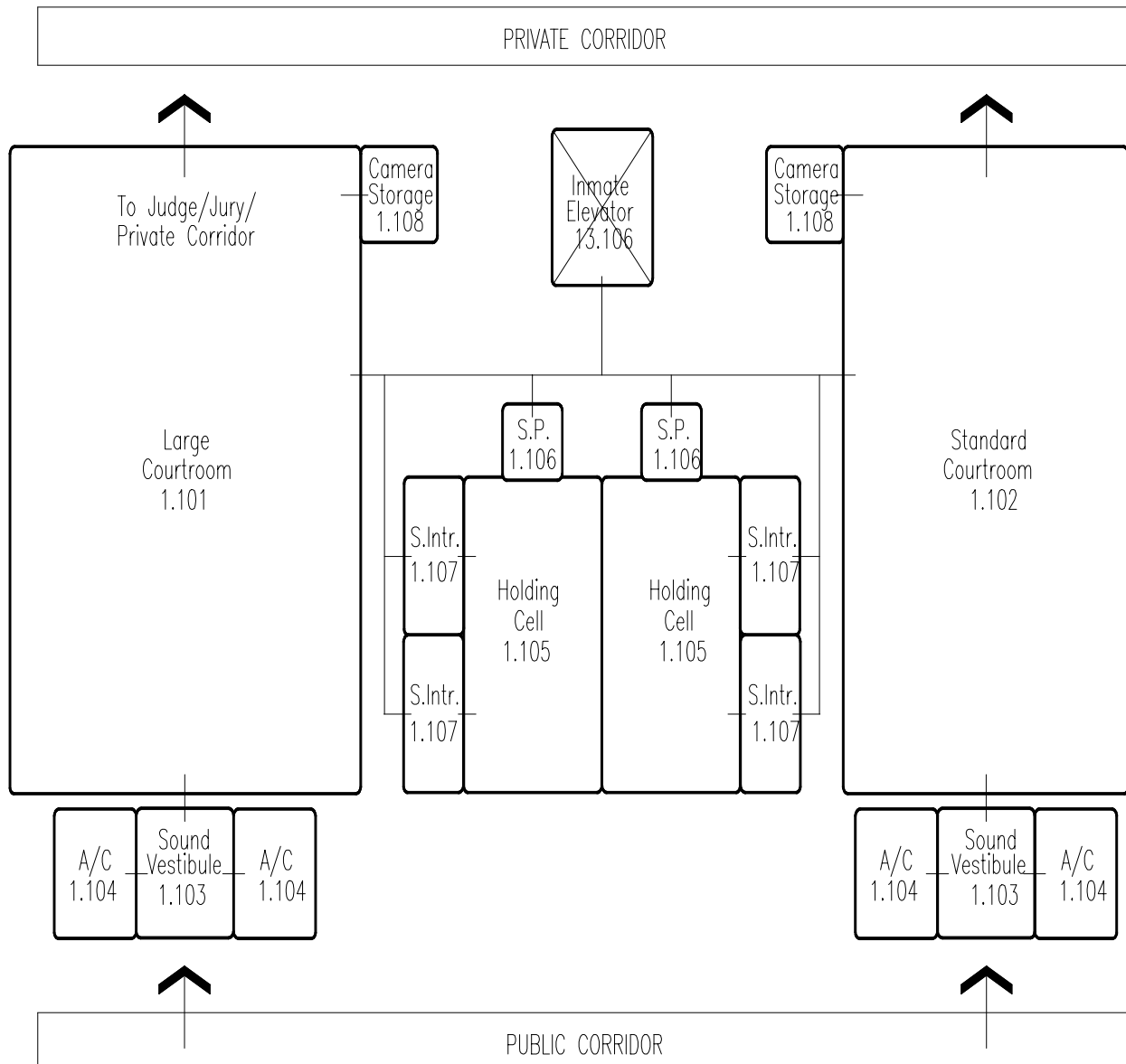
The assignment of grossing factors is one of the most overlooked functions performed by the planner or architect. There are no hard and fast “rules of thumb” regarding the assignment of these values. One method that a jurisdiction can request of the Project Team is that “benchmarking” from other facilities be used to identify the relative efficiency of the building as reflected in the net-to-gross calculation.

SPACE PROGRAM						
Code	Space	Space Standard	Persons/ Units/Space	Number of Spaces	Total Sq. Ft.	Comments
<b>2.000</b>	<b>CRIMINAL AND CIVIL SESSIONS COURTS</b>					
<b>2.100</b>	<b>Criminal Sessions Courtrooms</b>					
2.101	Large Courtroom	3500	1	1	3,500	seat 150 spectators; accessible
2.102	Standard Courtroom	2500	1	4	10,000	seat 70-80 spectators; accessible
2.103	Sound Vestibule	120	1	5	600	w/indicator light for "court in use"
2.104	Attorney/Client Room	100	4	10	1,000	w/door view panel
2.105	Holding Cell	375	2	5	1,875	holds 15 in 2 cells
2.106	Secure Sallyport	40	1	5	200	sound lock
2.107	Secure Interview Room	40	2	10	400	adjacent to cell w/pass thru window
2.108	Camera Storage	50	N/A	1	50	for courtroom cameras
<b>Sub-Total</b>					<b>17,625</b>	
<b>2.200</b>	<b>Civil Sessions Courtrooms</b>					
2.201	Large Courtroom	2250	1	1	2,250	seat 100 spectators; accessible
2.202	Standard Courtroom	1500	1	2	3,000	seat 30-40 spectators; accessible
2.203	Sound Vestibule	120	1	3	360	w/indicator light for "court in use"
2.204	Attorney/Witness Room	100	4	6	600	w/door view panel
<b>Sub-Total</b>					<b>6,210</b>	
<b>2.300</b>	<b>Judges' Sets</b>					
2.301	Judges' Chambers	320	6	8	2,560	w/built-in bookcases
2.302	Private Toilet	45	1	8	360	accessible
2.303	Judge's Secretary	160	4	8	1,280	waiting for at least four visitors
2.304	Judicial Commissioners' Offices	160	4	8	1,280	w/built-in bookcases
2.305	Clerk's Office	120	2	8	960	in close proximity to Chambers
2.306	File Storage Closet	50	1	8	400	secure lock; shelving
2.307	Supply Closet/Coffee Room	40	N/A	8	320	w/shelving and sink
2.308	Conference Room	300	10	1	300	close to chambers
<b>Sub-Total</b>					<b>7,460</b>	<b>32 staff</b>
<b>2.400</b>	<b>Mediation Rooms</b>					
2.401	Mediation	300	10	4	1,200	w/windows if possible; sound proof
2.402	Video Arraignment Room	300	6	1	300	w/Judges' Bench
2.403	Equipment Room	100	N/A	1	100	for video equipment
2.404	Staff Toilets	160	1	2	320	located near Judges' sets
<b>Sub-Total</b>					<b>1,920</b>	
<b>Sub-Total Net Square Feet</b>					<b>33,215</b>	
Grossing Factor @ 35% of Net					<b>11,625</b>	
<b>SUBTOTAL DEPARTMENTAL GSF</b>					<b>44,840</b>	<b>32 total staff</b>



Another product of this programming step should be adjacency or functional relationship diagrams such as the one illustrated in Figure 1-6. The purpose of these diagrams is to translate the spatial tables into illustrations of the relationship between the various spaces. These diagrams are not intended to be floor plans that reflect actual room layouts but to provide the architect with an indication of operational objectives illustrated as functional relationships.

Figure 1-6  
Adjacency or Functional Relationship Diagram



In Step 2, overall security issues should be addressed. The detailed design of the systems will occur during the design process, but the Program Statement offers the optimum time to discuss security concerns and options with the various stakeholders and to formulate a policy regarding electronic screening, access controls, prisoner movement and holding, parking controls, and many other aspects of insuring the safety



of all courthouse users. The matrix in Figure 1-7 is one method of illustrating the types of devices and equipment that should be considered in the programming process.

Figure 1-7  
Courtroom Communications/Visual Aids/Security Equipment Matrix

	COURTROOM							PUBLIC AREAS									
	JUDGES DAIS	COUNSEL TABLE	WITNESS BOX	JURY BOX	WELL SPACE	COURT REPORTERS	SPECTATOR AREA	FRONT ENTRANCE	PUBLIC CORRIDOR/LOBBY	PRIVATE CORRIDOR	CLERK OF COURT	SECURITY CONTROL CENTER	JUDGES CHAMBERS	JURY DELIBERATION ROOM	JURY ASSEMBLY		
ACCESS CONTROLS								●	●	●		●	●			●	
BUILT-IN TV MONITOR	●	●	●	●													
BULLET-PROOFING ON DAIS	●																
CCTV LOCATION					●		●	●	●	●							
COURTROOM CAMERA OUTLET					●		●										
CUFF PORTS		●	●														
DATA POINT	●	●				●		●			●	●	●			●	
DOOR CONTROLS	●										●	●					
DURESS ALARM	●					●				●	●	●	●			●	
EARPHONE JACK			●	●		●	●										
ELECTRICAL OUTLETS	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
ELECTRONIC SIGNAGE							●	●	●		●						
ENTRY DOOR CONTROL	●																
EXHIBITS STORAGE					●			●			●						
LIGHTING (TASK)	●	●			●	●							●				
METAL DETECTORS			●					●									
X-RAY MACHINE								●									
MICROPHONE	●	●	●	●													
NIGHT COMMUNICATION SYSTEM								●		●		●					
PHONE JACK	●							●	●		●	●	●	●	●	●	●
PULL-DOWN SCREEN					●												
SPEAKER SYSTEM					●		●		●	●							
TELEPHONE OUTLET																	
TELECONFERENCING OUTLET					●									●			
VCR SYSTEM					●						●	●	●	●	●	●	●
WHITE BOARD					●							●		●	●	●	●

As will be addressed further in these design guidelines, perhaps the greatest change since the 1981 Michigan Courthouse Study has been the use of technology throughout the judicial system and in the design of buildings to house judicial functions. During Step 2 of the programming process, the stakeholder discussions should identify appropriate technology for every system component. Not all of the technology requirements will require space, but virtually all examples of technology can reduce space requirements



from the traditional manual systems. An example of a method of summarizing the broad technology needs is shown in Figure 1-8.

Figure 1-8  
Court System Technological Considerations

At the conclusion of Step 2 another peer review is recommended. In some instances, the architect has been selected by this time in the process and, if so, should also be included in the review. In effect, an approval of this step in the Program Statement is an acceptance that the courthouse has been sized to satisfy the operational objectives, site constraints, and inter-departmental relationships as defined by a broad cross-section of potential users.

	COURTROOM								PUBLIC AREAS									
	JUDGE'S DAIS	COUNSEL TABLE	WITNESS BOX	JURY BOX	WELL SPACE	COURT REPORTERS	SPECTATOR AREA	FRONT ENTRANCE	PUBLIC CORRIDOR/LOBBY	PRIVATE CORRIDOR	CLERK OF COURT	SECURITY CONTROL CENTER	JUDGE'S CHAMBERS	JURY DELIBERATION ROOM	JURY ASSEMBLY			
ASSISTIVE LISTENING SYSTEMS				●			●							●	●			
AUTOMATED CASE RECORDS											●							
DESK-BASED LEGAL RESEARCH	●												●					
DOCUMENT IMAGING SYSTEMS											●							
ELECTRONIC FILING/DOCUMENT EXCH.						●					●		●					
INTERACTIVE VIDEO SYSTEMS						●			●						●			
LOCAL AREA NETWORKS	●					●					●		●					
OPTICAL DISK RETRIEVAL											●							
OPTICAL SCANNING DEVICES											●							
TELECONFERENCING	●	●	●										●					
TOUCH SCREEN VIDEO MONITORS									●						●			
VIDEO CONFERENCING	●	●	●						●				●					
VIDEO PUBLIC INFORMATION SYSTEMS									●						●			
PERSONAL COMPUTERS/NOTEBOOKS	●	●				●					●		●					
VIDEO MONITORS/TAPE MACHINES					●								●					
COMPUTER PRINTERS					●					●		●						
MODEMS	●	●				●					●		●					
CD ROM	●	●									●		●					
MICROPHONES	●	●	●	●		●							●					
FACSIMILE MACHINES	●	●				●					●		●					
X-RAY								●										
METAL DETECTORS								●										

### 1.3.3 Step 3 – Financial Framework

The last step in the preparation of a Program Statement is the identification of the amount funds that will be required to complete the construction and, if possible, the annual operation of the courthouse. A thorough Program Statement will also evaluate the methods of financing the capital requirement and include the potential annual debt service or lease payment. The following is a list of items to be addressed in developing the financial framework for the courthouse:

- Establish unit square foot cost ranges by component



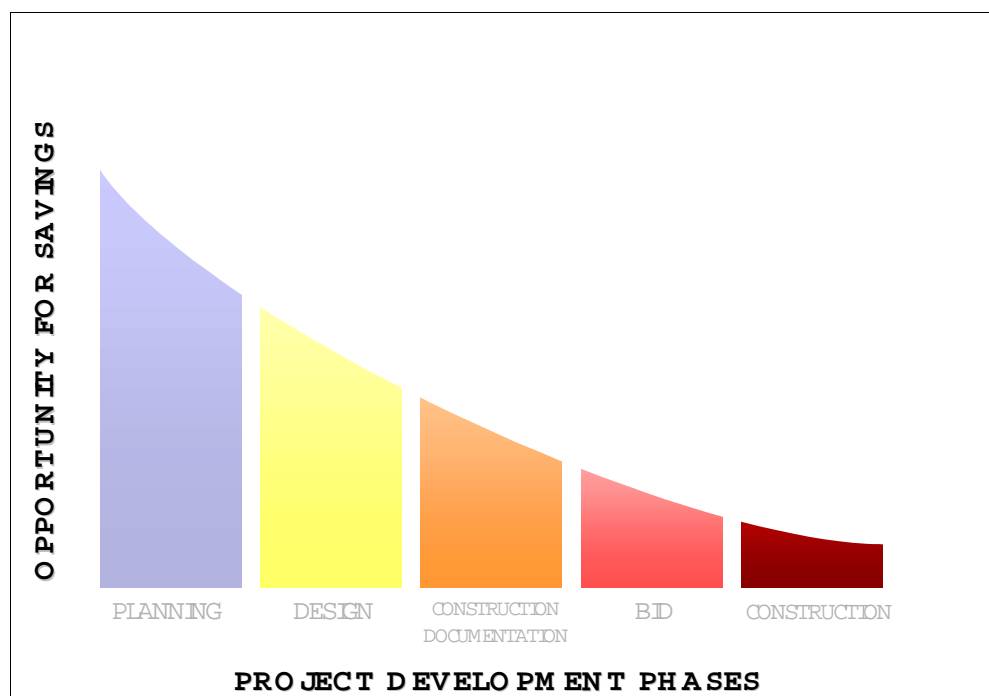
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- Evaluate most recent local relevant construction costs
- Confirm national, regional, and local cost experience
- Desegregate construction versus project costs
- Review budget estimates with architect and owner
- Define the traditional and alternatives methods of public financing
- Analyze the annual and total cost of various financing methods
- Review the current debt ceilings of the jurisdictions
- Establish impact of financed debt upon tax mileage
- Recommend the most appropriate method of financing
- Establish a cash flow table for operating and capital debt

The following diagram (Figure 1-9) illustrates the importance of beginning cost control methods during the planning phase.

Figure 1-9  
Cost Control Diagram





The earlier that cost estimates are prepared the greater the opportunity to manage the cost during the design process. Costs will be impacted by numerous variables that will emerge during the programming and design process. However, a jurisdiction is advised to become aware of the factors that will influence the total budget by researching costs and educating the courthouse users and the general public. As the process continues, the opportunities for cost containment diminish as the documents are more finalized.

In Figure 1-10, the major sections of the architectural specifications are presented with a summary statement with the factors that will influence cost. A cost per square foot range is shown in 1999 dollars ***based upon recent construction of courthouses throughout the nation***. These costs must be validated during the design process, but awareness of the programming and design factors influencing the cost should be constantly addressed and updated.

**Figure 1-10**  
**Cost Per Building Element of Court Facilities**

ELEMENT	DESIGN FACTORS THAT INFLUENCE COST		COST RANGE / GSF
<b>FOUNDATIONS</b> Standard Foundations Special Foundations	Local Soil Conditions Water Table Number of Floors	Structural Bay Sizes Floor to floor heights	\$1.50 - \$7.50
<b>SUPERSTRUCTURE</b> Slab On Grade Basement Excavation Basement	Basement Requirements Soil Capacity Water Table	Limited Site Area Requirements for Secure Below Grade Parking	\$1.00 - \$7.15
<b>SUBSTRUCTURE</b> Elevated Floor Structure Roof Structure Stair Construction	Spans Live Loads	Plan Shape Floor to floor heights	\$12.57 - \$25.00
<b>EXTERIOR CLOSURE</b> Exterior Cladding Exterior Doors & Windows	Wall to floor area Ratio Floor to floor heights Material Selections	Wall Detailing Amount / choice of Glazing	\$10.00 - \$25.85
<b>ROOFING</b> Roof Coverings	Number of Floors Traffic Requirements	Skylights / Roof Treatments	\$0.76 - \$4.00
<b>INTERIOR CONSTRUCTION</b> Partitions Interior Finishes Millwork	Shell Space Material Selection Acoustics / Floor to Slab Partitions	Finish Detailing Security Requirements Degree of Courts / Specialized Spaces	\$20.00 - \$58.11
<b>CONVEYING SYSTEMS</b> Elevators Escalators	Traffic Requirements Number of Core Areas	Cab Detailing Escalators	\$5.00 - \$8.22
<b>MECHANICAL</b> Plumbing HVAC Fire Protection System	Central Energy Plan Load Requirements Lighting Levels / Quality	Operating Flexibility System selections Control	\$15.00 - \$34.02
<b>ELECTRICAL</b> Service / Distribution Lighting / Power Special Electrical Systems Telephone systems	Emergency Power Requirements Load Requirements Lighting Levels / Quality	Security Operating Flexibility Communications	\$10.00 - \$23.44
<i>Continued on next page.....</i>			





**Figure 1-10 Continued**  
**Cost Per Building Element of Court Facilities**

<b>EQUIPMENT</b> Fixed / Moveable Equipment Furnishings	Scope		\$ .50 - \$2.00
<b>SITE WORK</b> Site Preparation / Improvements Site Utilities Streetscaping Public Sidewalks Road Widening	Utility Service Location Landscaping Access/ Egress	Security Parking Lighting Requirements	\$3.00 - \$10.00
<b>GENERAL CONDITIONS</b> Overhead	Project Delivery system Project Magnitude Project Complexity	Market Conditions Other Risks Location	\$8.00 - \$20.00 (6% - 13%)
<b>ESCALATION</b> Site Preparation / Improvements	Construction Schedule Market Conditions		\$20.00 - \$58.11 (6% - 13%)
<b>PROJECT COSTS</b>			
<b>SITE DEVELOPMENT</b> Site Pavings Landscaping Exterior Lighting	Topography Surrounding Area	Type of Paving Maturity of Plants Desired lighting levels	3.5% - 6.0% Of construction costs
<b>FURNISHINGS &amp; ART WORK</b> Specialty Communications Interior Furnishings Interior Art Environment Sculpture	Level of Technology Quality of Materials Specialty Floor to wall coverings	Window treatments Built-ins vs. moveable furniture Type, amount and location of art	7.0% - 15.0% Of construction costs
<b>PROJECT FEES</b> Bond Counsel Architectural and Engineering Services Specialty Consultants Testing Project Administration Construction Management	Type of financing Complexity of Structure Estimate Construction Budget	Amount of Soil Testing necessary Environmental conditions In house project management capability	8.0% - 17.5% Of construction costs
<b>PROJECT CONTINGENCY</b> Design contingency Construction contingency	Clarity of the Project Scope Known existing conditions	Level of oversight and management control Schedule	%5.0 - 15.0% Of construction costs
<b>TOTAL PROJECT COST RANGE</b>			<b>23.5% - 53.5%</b> <b>Of construction costs</b>

Developed by Phillips Swager Associates, Inc.; modification by Carter Goble Associates, Inc.

At the conclusion of Step 3, a unit cost estimate as shown in Figure 1-11, should be developed to gain acceptance of a budget from which the design process can be initiated. This estimate should be updated at least five times as the design process advances and additional detailed information is available. The Program Statement budget should include construction and project cost items so that the full impact of the expansion or new construction is understood by policy-makers and the public. Construction costs are associated with the labor and materials associated with building the courthouse, while project costs include non-construction items such as A-E fees, furnishings, specialty equipment, and contingencies. The costs shown in Figure 1-11 are taken from an actual project in Tennessee and are not intended to illustrate anticipated costs for projects in the State of Michigan.



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**Figure 1-11**  
**Capital Cost Estimates**

*Continued....*

Des.	Component	Gross Sq. Ft.	Unit Cost per Sq. Ft.	Total Cost
<b>1.000</b>	<b>CRIMINAL COURTS</b>	<b>26,514</b>	<b>\$180</b>	<b>\$4,772,520</b>
1.100	Criminal Court Courtrooms	19,521		
1.200	Judges' Sets	4,401		
1.300	Jury Rooms	2,592		
<b>2.000</b>	<b>CRIMINAL and CIVIL SESSIONS COURTS</b>	<b>44,840</b>	<b>\$180</b>	<b>\$8,071,245</b>
2.100	Criminal Sessions Courtrooms	23,794		
2.200	Civil Sessions Courtrooms	8,384		
2.300	Judges' Sets	10,071		
2.400	Jury Rooms	2,592		
<b>3.000</b>	<b>CIRCUIT and 4th CIRCUIT COURTS</b>	<b>25,785</b>	<b>\$180</b>	<b>\$4,641,300</b>
3.100	Circuit Court Courtrooms	10,530		
3.200	4th Circuit Court Courtrooms	6,062		
3.300	Judges' Sets	6,602		
3.400	Jury Rooms	2,592		
<b>4.000</b>	<b>CHANCERY COURTS</b>	<b>22,896</b>	<b>\$170</b>	<b>\$3,892,320</b>
4.100	Chancery Court	14,580		
4.200	Probate Court	2,457		
4.300	Chancellor's and Master's Sets	4,455		
4.400	Jury Rooms	1,404		
<b>5.000</b>	<b>MUNICIPAL COURTS</b>	<b>12,515</b>	<b>\$170</b>	<b>\$2,127,465</b>
5.100	Courts	10,314		
5.200	Judges' Sets	2,201		
<b>6.000</b>	<b>CRIMINAL and 4th CIRCUIT COURT CLERK</b>	<b>20,856</b>	<b>\$110</b>	<b>\$2,294,188</b>
6.100	Administration	1,300		
6.200	Criminal Section Division Clerks (5 Divisions)	3,313		
6.300	Criminal Division Counter Activities	1,913		
6.400	Criminal Division Support Areas	3,138		
6.500	4th Circuit Division	2,806		
6.600	4th Circuit Courts Activities	2,463		
6.700	Court Support Areas	5,925		
<b>7.000</b>	<b>SESSIONS COURT CLERK</b>	<b>28,600</b>	<b>\$110</b>	<b>\$3,146,000</b>
7.100	Administration	1,438		
7.200	Circuit Court Divisions I, II, & III	5,025		
7.300	Criminal Division - Courtroom	8,844		
7.400	Criminal Division - Computer	2,300		
7.500	Criminal Division - Collections	1,713		
7.600	Civil Division	4,819		
7.700	Sessions Clerk Support Space	4,463		
<b>8.000</b>	<b>CHANCERY and PROBATE CLERK of COURT</b>	<b>9,119</b>	<b>\$125</b>	<b>\$1,139,844</b>
8.100	Chancery Court	4,544		
8.200	Probate Functions	1,875		
8.300	Chancery and Probate Support	2,700		
<b>9.000</b>	<b>MUNICIPAL COURT CLERK</b>	<b>5,150</b>	<b>\$125</b>	<b>\$643,750</b>
9.100	Administration	888		
9.200	Division Clerks	2,738		
9.300	Clerk Support Space	1,525		



**Figure 1-11 Continued**  
**Capital Cost Estimates**

<b>10.000</b>	<b>OFFICE of the ATTORNEY GENERAL</b>	<b>36,714</b>	<b>\$115</b>	<b>\$4,222,110</b>
10.100	Administration Section	1,994		
10.200	Criminal Court Division	3,741		
10.300	Juvenile Division	1,291		
10.400	Grand Jury Division	2,915		
10.500	General Sessions Div. (Misdemeanor, Felony, DUI, Case Screening Units)	7,149		
10.600	Violent Crime Unit	1,291		
10.700	Drug Unit	1,581		
10.800	White Collar Unit	827		
10.900	Family Crisis Unit	2,030		
10.1000	Victim Witness Unit (Serves Criminal, General Sessions, & 4th Circuit)	3,023		
10.1100	Support Area	10,875		
<b>11.000</b>	<b>PUBLIC DEFENDER</b>	<b>8,809</b>	<b>\$100</b>	<b>\$880,875</b>
11.100	Criminal Sessions Court	5,800		
11.200	Support Areas	3,009		
<b>12.000</b>	<b>COUNTY PROBATION DEPARTMENT</b>	<b>13,413</b>	<b>\$100</b>	<b>\$1,341,250</b>
12.100	Inmate Visitation	1,740		
12.200	Inmate Services	9,150		
12.300	Intensive Management Unit	2,523		
<b>13.000</b>	<b>JUSTICE CENTER SUPPORT AREAS</b>	<b>39,198</b>	<b>\$130</b>	<b>\$5,095,740</b>
13.100	Public Lobby, Circulation, and Toilets	21,600		
13.200	Amenities Areas	1,500		
13.300	Officers of the Court Area	1,848		
13.400	Law Library	3,594		
13.500	Jury Assembly	4,896		
13.600	Operations Center	5,760		
<b>TOTALS</b>		<b>294,408</b>		<b>\$35,831,616</b>
Building Gross Factor @ 8%		23,553	\$115	\$2,708,554
<b>GRAND TOTALS</b>		<b>317,961</b>		<b>\$38,540,170</b>
<b>SITE DEVELOPMENT COSTS</b>				
● Site Pavings, Landscaping, etc. @ 3.5% of Construction				\$1,348,906
<b>Sub-Total Site Development</b>				<b>\$1,348,906</b>
<b>FIXTURES, FURNISHINGS &amp; EQUIPMENT and SPECIALTIES</b>				
● Specialty Communications, telephone, etc. @ 3.3% of Construction Cost				\$1,271,826
● Fixtures, Furnishings & Equipment @ 7% of Construction Cost				\$2,697,812
<b>Sub-Total FF&amp;E and Specialties</b>				<b>\$3,969,637</b>
<b>PROJECT FEES</b>				
● Architectural Fees @ 7.2% of Construction and Site Development				\$2,872,013
● Testing Fees @ 0.5% of Construction				\$192,701
● Project Administration Fees @ 1.5% of Construction				\$578,103
<b>Sub-Total Project Fees</b>				<b>\$3,642,817</b>
<b>PROJECT CONTINGENCIES</b>				
● Design & Construction Contingency @ 10% of Const., FF&E and Specialties, & Arch. Fees				\$4,673,073
<b>Sub-Total Project Contingencies</b>				<b>\$4,673,073</b>
<b>TOTAL CONSTRUCTION and PROJECT FEES</b>				<b>\$52,174,603</b>

Source: CGA Consulting Services, Inc.; August 1997

Final approval of the Program Statement is also an acceptance of the budget for construction. This information will be used to guide the design process. If an acceptable budget does not result from the Program Statement, the process should be repeated in part or full until the budget and space assignments are in agreement.



## 1.4 THE DESIGN STEPS

There are four distinct steps of the standard architectural services agreement for the design of a structure including:

<b>STEP 1</b>	<b>SCHEMATIC DESIGN</b>
<b>STEP 2</b>	<b>DESIGN DEVELOPMENT</b>
<b>STEP 3</b>	<b>CONSTRUCTION DOCUMENTS</b>
<b>STEP 4</b>	<b>CONSTRUCTION ADMINISTRATION</b>

To complete the construction of a courthouse, a jurisdiction will need to accomplish all four of these stages. Depending upon the method of design and construction, one or more than one architectural agreement may be used. For example, the traditional process, design-bid-build, uses the architect for all four of the above-mentioned design steps. If a jurisdiction elects to use a design-build approach to project delivery, then the first two steps often are merged into one and the builder assumes the responsibility for much of Step 4.

The decision as to which project delivery method to use should be reached during the Programming Phase. For the purpose of these design guidelines, the traditional architectural steps will be described. Any modifications to these should result from a deliberative process considering schedule, local expertise, and statutes permitting alternative delivery methods.

### 1.4.1 Step 1 – Schematic Design

After the architectural selection process is completed, schematic design begins upon approval of the architectural program and the project budget. The objective of this step is to conceptually order the functional components that were defined in the Program Statement.

Since communication and transfer of information is critical at the transition from programming to the commencement of design, a workshop that features the Programmer, Architect, and representatives of a Stakeholder Committee is recommended. A workshop offers the opportunity for the architect to clearly understand the vision and mission statements and to set priorities established for communication and scheduling.

If the site has not been confirmed during the development of the Program Statement, the Architect will generally be required to coordinate with the Project Manager (assigned by the constructing jurisdiction) to provide an accurate boundary and topographic survey. This survey, which may be subcontracted to a site survey consultant, will identify the location of boundaries and/or project limits and the location of existing utilities and improvements. The Architect will review all available information on the physical characteristics, including geo-technical data, utility infrastructure, and site work development. The site survey generally occurs concurrently with the initiation of schematic design. The following summarizes the basic tasks to be completed during the schematic design step:

- Evaluate the selected site for the proposed structure, including the relationship of existing improvements, accessibility, and established drainage patterns
- Evaluate siting of the proposed structure with respect to traffic patterns and building accessibility for vehicles and pedestrians (including the factors of handicapped access, safety, and regional climate)



- Interpret the Program Statement for the interior space relationships, circulation patterns, and general security requirements
- Comply with the Michigan Court Design Guidelines, appropriate building codes, State Fire Marshal codes (NFPA), and state and federal handicapped accessibility requirements
- Prepare concept drawings (site plan, floor plans, elevations, basic building sections, etc.) for reviews with the jurisdictional Project Manager and appointed members of a Project Advisory Committee
- Identify any major engineering issues related to structural, seismic, or environmental conditions that could impact the configuration, appearance, and cost of the courthouse
- Prepare the first construction cost estimate based upon an actual building configuration

This first step in the design process requires extensive reviews since the functional basis for the courthouse, the appearance, and the cost will result from this process. Subsequent steps will add detail to these decisions with the primary objective of producing documents from which construction can be initiated. Therefore, the time allocated for a thorough schematic design and review process should be generous enough to conduct a “scenario analysis” of each component of the facility. This type of analysis encourages a variety of stakeholders to “walk-through” every space as a user, litigant, prisoner, or citizen. The use of perspectives, three dimensional models, or virtual reality software programs to facilitate the “scenario analysis” is encouraged to make this review as productive as possible. (Software is available from dealers of CAD software programs.)

A formal, written approval is required before the Architect is authorized to proceed to Step 2, Design Development.

#### **1.4.2 Step 2 - Design Development**

During the design development step, the Architect will refine the overall design beginning with floor plans and the structural framing system. The design development phase takes the schematic designs to the next level of detail as follows:

- Study building design and elevations for aesthetics, cost effectiveness, and maintenance of exterior building materials on short and long-term basis
- Review preliminary design with the Jurisdictional Project Manager as well as local and state building officials, then submit preliminary documents for review to other regulatory agencies
- Study and establish design of support systems including electrical, mechanical, plumbing, security, control, communication, and fire safety.

Throughout the design, the Architect will interface with the jurisdictional Project Manager and the Project Advisory Committee to translate the evolving design and to discuss cost implications of major decisions.




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**SECTION 1**  
THE PLANNING PROCESS

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The following deliverables will be completed during design development process.

<b>Architectural</b>	Floor Plans (1/8" = 1'-0") Key Area Plans (1/4" = 1'-0") Building Elevations (1/8" = 1'-0") Building Sections (1/8" = 1'-0") Typical Wall Sections (3/4" = 1'-0") Key Interior Elevations (1/4" = 1'-0") Preliminary Finish Schedule Preliminary Door and Frame Schedule Preliminary Window Schedule Preliminary Speciality Hardware Schedule
<b>Engineering</b>	<u>Site</u>  Building and parking location plan Site Grading Plan Preliminary Site Details  <u>Structural</u>  Typical Floor Framing Plans (1/8" = 1'-0") Preliminary Foundations (1/8" = 1'-0") Preliminary Structural Details
<b>Mechanical (Plumbing and HVAC)</b>	Mechanical Floor Plans Equipment Rooms Layouts Preliminary Equipment Selection (catalogue cut sheets and leaflets or brochures provided by equipment vendors) Electrical Site Lighting Plan Power and Lighting Plans Preliminary Riser Diagram Equipment Room Layouts Preliminary Equipment Selection (catalogue cuts)
<b>Acoustical</b>	Noise Level Diagrams Recommended Sound Absorption Plan
<b>Landscape Design</b>	Planting Plan Plant Selections Paving Patterns Sculpture and environment art
<b>Signage &amp; Graphics</b>	Narrative Describing sign & graphics standards Location of signs Illumination points for external signage
<b>Food Service</b>	Preliminary kitchen layout Preliminary equipment selection



<b>Security</b>	Preliminary electronic system and security hardware layouts Identification of surveillance cameras Design of TV in the courtroom arrangements Preliminary electronic system and security hardware selection
<b>Technology Systems</b>	Identification of types of technology Requirements in each space Preliminary electronic system layouts Identification of special wiring and connections needs Preliminary technology hardware selection
<b>Specifications</b>	Preliminary specifications in Construction Specifications Institute (CSI) Master and Page format

During the design development step, a minimum of one and preferably two additional cost estimates should be prepared. A signed approval of the design plans and cost estimate is necessary before proceeding to the preparation of Construction Documents.

### 1.4.3 Step 3 – Construction Documents

After approval of the design development documents, the Architect will commence the development of construction documents and regular consultations with the jurisdictional Project Manager regarding the selection of interior finish materials, exterior finishes, and equipment (fixed and movable). The Architect will revise and update cost estimates and advise the Project Manager of these revisions. The following steps summarize some of the major elements to be completed, which will be used for bids and construction of the facility:

- Prepare drawings at the appropriate scale for all elements of the courthouse construction
- Develop construction requirements including lighting levels, sound isolation, thermal and moisture protection, interior environmental comfort (heating, air conditioning, and ventilation), natural day-lighting, and exterior views
- Prepare site work documents including roads, parking, landscaping, grading, drainage, utilities, and graphics
- Determine cost effective and maintenance factors of interior materials and comply with fire and life safety requirements
- Determine and specify location of signage as well as fixed equipment
- Develop written technical specifications. Consult with the Project Manager regarding any special requirements to be included in the contract documents for the bidder's information. Develop general conditions incorporating the jurisdiction's contract documents



- Develop the detailed security and communication documents for each component of the facility
- Submit final construction documents including specifications to the Project Manager for review and approval

#### *1.4.3.1 Conduct Detailed Reviews of the Construction Documents*

Throughout design development and construction document preparation, the Architect should conduct regular reviews with all agencies and individuals that are part of the approval process. These reviews will include checks on the use of proper codes and standards, confirmation that the design meets established facility requirements, evaluation of the design's constructability, and compliance with cost objectives.

#### *1.4.3.2 Final Cost Estimate*

A final cost estimate should be prepared prior to bidding that will include detailed quantity surveys of all architectural and engineering systems. Each item will be priced according to labor, materials, equipment, and subcontracted unit prices. All pricing information will be obtained from the local area and will include allowances for increases in the building cost index.

#### *1.4.3.3 Coordination of the Construction Bidding Process*

The Architect will be responsible for preparing all of the information necessary to coordinate the construction documents in a manner suitable for the solicitation of construction bids. In the pre-bidding stage, the Architect should prepare commercial terms and conditions. Working with the Project Manager, the following pre-bid tasks should be undertaken by the Architect:

- Through a screening process, identify all qualified bidders for the project. A pre-bid meeting should be conducted to explain all of the project requirements prior to soliciting final construction bid costs
- Coordinate the advertisement of the bid package and assist in answering any questions regarding the Court's role in the construction and operation of the facility
- On behalf of the jurisdiction, conduct the bid opening and participate with the Project Manager and other appropriate procurement personnel in evaluating the most responsive bid

#### *1.4.3.4 Conduct Pre-Construction Conference*

The Architect should conduct a pre-construction conference with the contractor, subcontractors, and the Project Manager. The purpose of this meeting is to define reporting protocols, schedules, progress payments, and logistics associated with initiating construction.

### **1.4.4 Step 4 – Construction Administration**

There are several different methods of administering the construction phase. In small projects, the local jurisdiction may elect to extend the Architect's contract beyond the traditional "periodic observation"





requirement of the Standard American Institute of Architects (AIA) Agreement to include a “clerk of the works” service. The Standard AIA agreement provides for periodic site visits to determine the progress of construction, to approve contractor payment requests, and to answer general questions regarding interpretation of the documents. If a more extensive involvement by the Architect is desired, then the agreement can be modified to provide a full time presence on site by the Architect. [A copy of the agreement may be obtained from a local AIA office in most cities on the Internet through the AIA website: [www.aiaonline.com](http://www.aiaonline.com) or from the national headquarters in Washington D.C. at (202)-626-7476.]

Many jurisdictions have elected to engage a Program or Construction Manager that is responsible for quality control, schedule, and progress payment requests. The issue of whether these services are provided by the Architect or a separately contracted Program or Construction Manager is a local decision. The alternative methods for construction management will be discussed in another section, but in the following paragraphs the type of tasks to be undertaken are outlined.

## 1.5 CONSTRUCTION METHODS

The method selected for construction of the courthouse is a reflection of many local conditions, traditions, and codes. Even though this choice can be influenced by the project advisory committee, ultimately construction methods are defined by the Architect based upon cost factors, local building availability and expertise, design solution, local materials, and trades. During the design process, the Architect, in conjunction with engineering support, should identify the potential methods for construction so that not only will constructability challenges be identified early in the planning process, but maintainability issues can be discussed and used to guide the construction approaches.

For example, synthetic exterior finishes have become very popular for public building facades due to the ease of construction and the relatively low initial cost. The life cycle costs of this particular exterior “cladding” approach deserves careful study before a final decision is made. The same can be said of floor and wall coverings. The point is to engage the design team in discussions of construction techniques during the early schematic design phases so that as budget “creep” occurs, the final step is not “de-value engineering”.

### 1.5.1 Building Approaches

One of the most important decisions that will be made as the planning process is concluded and the design process commences will be the building approach. Essentially a jurisdiction can complete the design documents and solicit construction prices (bids) from qualified and bonded contractors. This process is called **design-bid** since a complete set of construction documents are available for contractors to develop detailed bids. In most instances, the lowest responsible bid is awarded the project. Often, debate will occur as to the “responsible” part of the statement when a jurisdiction attempts to choose between many contractors and alternates to the base bid. Any qualified and bonded contractor can bid on publicly offered projects, even if the jurisdiction has experienced problems with the contractor in the past. If the contractor meets all of the procurement guidelines and has the lowest bid, challenges to an award will be difficult to uphold.

The advantage of the design-bid approach is that the full details of the construction are known through the completion of the documents and the appropriate reviews prior to soliciting the bids. Therefore, the awarding jurisdiction knows the final price at bid opening, unless change orders are permitted during the construction process. Most of the time a contingency allowance for changes is a part of the project budget. A potential disadvantage of this traditional approach is that the design and construction steps are completed sequentially rather than consecutively, which will require a longer time frame for the entire design and



construction process. Under the design-bid approach, the architect remains the owner's representative and as such can cite the contractor if faulty work is observed.

The popular alternative to the traditional approach is **design-build**, which is exactly what the title implies; the design and the construction process, is integrated, and, in effect, the Architect is an employee of the contractor. This approach is gaining in popularity because of the single point of control that the owner has by having one entity – the contractor – responsible for the entire process. In most instances this approach expedites the building process.

The disadvantage to this process can be the relative inaccessibility of the design expertise since the Architect is "just another subcontractor" and can be insulated by the contractor. In the design-build approach, the Architect's allegiance is to the contractor and not the owner, leaving that responsibility to the contractor. Of course, the Architect is bound by professional ethics to report any faulty construction methods and is liable to the owner and contractor for design errors, but the direct relationship with the owner can be lost in the design-build method. All of this can be managed through the contract and need not prevent the owner from the desired level of interaction with the architect.

While the value of the construction is not the final determinant in the decision as to which approach is preferred, design-build tends to be most effective in larger construction projects that are complicated and where time is of the essence.

### 1.5.2 Building Techniques

Traditionally, courthouses have followed the typical construction techniques using masonry, steel, or reinforced concrete structural systems. The most critical structural consideration is usually the creation of a column-free courtroom space. In today's building climate, the courthouse is generally defined by a structural frame of concrete or steel columns and beams with an exterior "cladding" applied to the structural frame. The function of the courthouse does not generally require long-span structural systems, such as the column-free floor space of a convention center. The complexity of the structural system and the concomitant construction method will be determined more by seismic and other local codes than the functions of the courthouse.

Although the structural system is "typical", this does not mean to imply that the Heating, Ventilating, and Air Conditioning (HVAC) systems should be considered as "off-the-shelf" systems. Most complaints in court facilities (other than lack of functional space) center around the inability to control the temperature in the courtrooms. In part, this is due to the unavoidable situation where the courtroom has highly fluctuating occupancy from full to virtually empty during a normal operating day. Individualized controls are possible, and even preferable, but add cost to the project.

Another aspect of operation that should be carefully evaluated in selecting building techniques and methods is acoustical control. The noise levels, reverberation time, and sound absorption will be influenced by the choice of building systems and finishes but can be controlled through the design process. Relative to acoustical consideration of building systems, the major concerns are the management of noise levels, vibration, and reverberation within the courtroom. Noise, sound absorption, and reverberation calibrations have been developed by national acoustical societies and should be used in the design of the noise-sensitive spaces. With the importance of noise control, the use of an acoustical specialist is recommended.

Light levels impact the functionality and atmosphere of the court. While this is true in virtually all of the spaces of the facility, the courtroom's effectiveness is significantly influenced by the type of lighting. Natural lighting in a courtroom is a debatable subject. Some judicial officers welcome the relief from artificial light that is possible with well designed openings for natural light while others, equally eloquently, argue that



views to the outside world are potentially distracting and also represent security hazards. Both conditions can be managed by design and construction methods.

The method of construction should be a result of the operations and design process and not dictate the options, even though prevailing conditions, such as addition to an existing building, may limit construction choices. In the traditional design-bid process, the architect will determine the construction methods through the preparation of design documents. Therefore, the construction method should reflect the operational parameters of the court. In the design-build process, the decision regarding the construction approach is vested in the builder, potentially limiting the owner's and architect's ability to control the choices. As long as these factors are addressed during the planning and early design phases, the choices of construction can remain flexible.

### **1.5.3 Life Cycle Considerations**

As more information becomes available through internet access, national publications, and conferences, such as the National Association of Counties, local and state jurisdictions are becoming more demanding about defining the first dollar cost of a facility versus the annual operating costs. During the early planning and design phases, the components of the courthouse that have a definable useful life should be identified and choices presented that quantify first versus continuing dollar expenditures. Over time, virtually all of the courthouse will need to be replaced, although the structural system and exterior facade should have a useful life expressed in centuries rather than decades. A basic rule of thumb should be the identification of replacement costs in decades beginning with the first 10 years and identifying all systems, finishes, and equipment that under "normal" use conditions will require replacement on a decade-by-decade basis.

For example, during the first decade some floor coverings (carpet) may need replacing in high traffic areas, perhaps leading to the use of a hard surface floor covering that may cost more initially (marble) but last for 50+ years with good maintenance. The "big ticket" items such as HVAC systems, elevators, and roof must be considered carefully to quantify the benefit of a higher initial cost as opposed to higher annual maintenance and earlier replacement costs that could result from choosing a lower first-cost item.

Beginning with the programming phase and increasing in intensity during the design phases, the selection of major systems, equipment, and finishes should be subjected to detailed life cycle reviews, using design and construction professionals, maintenance personnel, and vendor representatives. During the latter stages of design, a process of value engineering is recommended. This is the final threshold that allows the owner the opportunity to choose a system or finish based upon the life cycle rather than initial investment.

An owner need not wait until the pre-bid value engineering workshop to view life cycle information but may require a planning and design approach that identifies at each stage of the process the major courthouse components that are subject to decisions regarding initial versus continuing cost comparisons.

### **1.5.4 Project Organization**

One of the most important tools for an Architect to use is a clear line of communication between the multiple participants on this project. Each person's level of responsibility throughout the project should be clearly delineated at the on-set of construction. The Architect's responsibility is to the contracting jurisdiction, with reports most often made directly to the Project Manager.

A project organization matrix is a tool that should delineate each participant's level of responsibility at each phase of the project (i.e., action imperative, consultation only, action not essential, need not inform, or



decision required) at each phase of the project. The development of the project organization matrix can be very helpful to all team members in establishing the need to respond in a timely manner where appropriate.

#### *1.5.4.1 Description of Construction Phase Services*

The following activities explain a process which can be used to properly administer the entire construction process. Communication among the different participants on and off the job site is the most important aspect of the process. An effective on-site communication program is essential to provide for distributing, expediting, and documenting the following items:

- Contract Documents
- Contractor Request for Information
- Design Information
- Department Directives
- Architect and Engineer Directives
- Material and System Submittals and Approvals
- Change Conditions and Claims
- Minutes of Meetings
- Periodic Project Reports
- Contractor Non-Conforming Work

The Architect will assure that all affected or involved parties receive information that is pertinent to specified project responsibilities. The intent of the regular reporting requirements is not to make the various parties generate unnecessary information but to assure that the relevant information is distributed and acknowledged in accordance with the areas of representation on the job site.

Various techniques are available for use at the construction site to ensure that the communication procedures address all participants listed in the project organizational matrix. Additional documents include:

- Project Directory
- Communication and Responsibility Flow Chart
- Contractor Correspondence Files
- Chain of Responsibility or Authority
- Shop Drawings and Submittal Flow Chart
- Confirmation of Verbal Field Orders
- Shop Drawings to Affected Contractor for Coordination



#### 1.5.4.2 Construction Communication Procedures

The communication process is extremely important in ensuring that the resulting building represents an efficient and cost-effective facility. The communication process begins in the programming phase and should continue throughout the entire construction process. A very critical transition period occurs between the design and construction phases. Major role changes can take place when the Architect's participation is de-emphasized and the role of the builder becomes paramount to the successful continuation and completion of the project.

Having successfully completed the transition from the design phase to the construction phase, numerous management techniques such as those enumerated below should be used to solidify a sound communication process through the construction phase.

Weekly Job Meetings - Regularly scheduled weekly job meetings provide the most effective medium for job communications. Minutes of these meetings will be distributed to the contractors and all members of the project team, including the Project Manager.

Monthly Project Meetings - Senior office staff of the Contractor, the Architect, and the Project Manager should attend the monthly project meetings.

Quality Control - Quality control should be a common goal of all principal project participants. The quality control procedures should place the construction professional on the same side of the construction process as the local jurisdiction and the Architect. The Architect specifies quality, retains the right to judge quality performance, and remains the final authority who determines if the quality of the Contractor's work meets the requirements of the contract documents. The role of the Architect is to establish the procedures by which quality control occurs, to detect any non-conforming work, and to notify the Contractor of that deficiency.

Monitor Project Status and Progress - Monthly project schedule meetings should be held to determine the project status, solicit and suggest needed changes in work activities, and suggest and/or dictate overtime or supplemental forces where such are required. In addition, this meeting can be used to resolve potential problems and changes, which may impact the project schedule and cost.

The Contractor will be required to submit a detailed construction schedule indicating an alignment of the work activities that will permit the project to proceed in an orderly and planned sequence. In the event some unforeseen difficulty occurs, such as delay in the delivery of materials or insufficient labor force, the Contractor should be required to submit a recovery schedule that is a plan of action in which lost time will be recovered through re-sequencing of work activities to overcome delay.

Monitor Project Budget - Any engineering and construction changes that have an impact on the project budget, schedule, and quality should be continuously monitored. An impact statement for each change to the project should be completed. This control mechanism is essential to eliminate the possibility of allowing changes to adversely impact the mission of the court.

Continuous architectural reviews are paramount in producing a complete set of plans and specifications. This process is the best method of negating the effect of unanticipated changes in the budget due to errors or omissions in the project plans and specifications.

Constructability reviews can minimize any change order activities during the construction phase. In the event that some items slide through the review process, the Architect should assume a proactive role in negotiating the effects of the change order to minimize its impact on the project budget. Computerized estimating programs can be used to accurately predict the costs of any and all anticipated changes in the work. Since Contractors are required to categorize work into seven day segments and to place a cost value



on each activity, the Architect will have the capability to accurately predict estimated costs for any changes to these activities. The Contractor's knowledge that the Architect is cognizant of this level of detail in pricing activity will be advantageous to the Funding Unit as the negotiating process begins and proceeds to a final resolution of the issue.

#### *1.5.4.3 Conduct Final Inspection*

As a final step in the process, the Architect will participate with the Project Manager, appropriate Court personnel, local, county and state officials, the Contractor, and other officials in the final inspection of the facility. On behalf of the jurisdiction, the Architect will recommend necessary modifications to any aspect of the courthouse to comply with the operational and design objectives.

The Architect will conduct a post-construction phase close-out program highlighting the following areas:

- Record Drawings
- Operation and Maintenance Manuals
- Warranties and Call-Backs
- Occupancy Permit
- Occupancy Plan
- Job File Preservation
- Change Order Resolution
- Claims Negotiations
- Final Payment
- Close-Out Report

#### *1.5.4.4 Identify and Coordinate All Construction Warranty Provisions*

Each component of the courthouse will involve conventional and special equipment. The Architect will work closely with the General Contractor to identify all equipment, materials, and guarantees. A matrix will be developed that defines the nature of the warranty and its expiration period, which should assist the local jurisdiction in evaluating in-house maintenance requirements relative to the warranties.

## **1.6 THE PROJECT MANAGEMENT CYCLE**

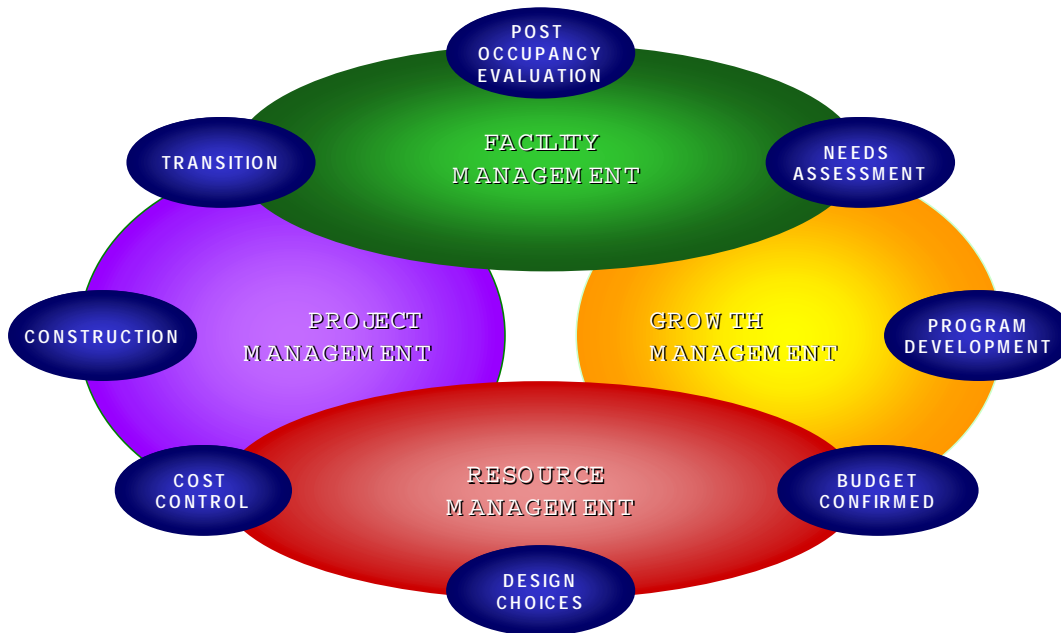
The steps involved with organizing and initiating a design project were previously discussed in these guidelines. The importance of a well conceived Advisory Committee of the stakeholders was emphasized so that the final results of the planning, design, and construction effort reflect as close to a consensus solution as is possible in a democratic process. The planning process, while ultimately linear, has an inherent cyclic nature as the Project Team works towards consensus at each stage. To achieve consensus,





information will be developed, tested with stakeholders, refined, and re-introduced in the process as shown in Figure 1-12, on the following page, The Program Management Cycle.

Figure 1-12  
The Program Management Cycle



The cycle of carefully executed steps can be organized into four distinct, but interrelated, areas that have specific products and require agreement before proceeding to the next level of project completion. The four areas include:

**Growth Management:** The Project needs are analyzed in the context of the judicial system and these needs are used to test functional and spatial responses, to establish a schedule, and to outline an initial budget. Being unable to satisfy the project budget does not mean changing the need but may require a more in-depth analysis of operational, rather than capital, solutions.

**Resource Management:** The bridge between the steps that define need and those that identify resources is critical. In this stage of the cycle, the number of courtrooms by type will have been determined and the consequences in terms of other staffing, spatial, and functional responses quantified. The outcome of this step may require a re-evaluation of the methods available for meeting the need.

**Project Management:** During the Resource Management stage of the Project Management Cycle several design options are prepared and a decision is reached as to the most appropriate solution that meets the stated needs from the initial Growth Management stage. In the Project Management stage of the cycle, the focus is upon cost containment and managing the construction phase of the project. Although the control of cost begins with the Architectural Program as shown earlier in Figure 1-13, the challenge in this stage of the Project Management Cycle is to contain the costs within the budget established during the planning and design process.

**Facility Management:** During this stage of the cycle, plans should be developed to activate and maintain the courthouse. One of the repeated mistakes of capital projects is the imbalance of resources and attention to the planning, design, and construction versus the preparation for taking “ownership” of the facility. Prior



to opening the new or expanded courthouse, an activation plan should be in place that defines the emergency security procedures, mechanical system shut-downs, fire evacuation procedures, and general assistance among other events. SCAO may provide assistance with security/emergency review and planning.

The advantage of following a program management cycle is that by assigning responsibilities for the various steps and establishing the decision-making structure insures that each step has definable results and that the linkage to the next step can be understood better. The most frequent mistakes in project implementation are unclear assignment of responsibilities between the many steps and poor communication among the stakeholders. Setting out a comprehensive process at the initiation of the project can aid in avoiding costly mistakes.

Managing the project can be accomplished in several ways, and the deliberation as to the preferred approach should be as thorough as the selection of the design team. To summarize, the overall responsibility can be assigned to an individual or department within government that accomplishes the myriad of tasks through "in-house" expertise. Another alternative is the selection of consultants to act as agents of the governmental jurisdiction in the management of the planning, design, construction, and activation steps. Either way, the governmental jurisdiction must maintain an active review and decision-making role throughout the process.

If the use of external consultants is preferred, several approaches should be considered as summarized below.

#### **1.6.1 Construction Manager (CM)**

Under this approach, the jurisdiction conducts a solicitation process similar to choosing an architectural firm. The selection process can be two-tiered by first establishing qualifications and after screening the applicants to those with the most relevant experience, requesting detailed proposals.

The responsibilities of the CM can be as broad or focused as the jurisdiction needs depending upon the availability of in-house expertise. Normally, however, when a jurisdiction engages a CM, the role broadly includes the following:

- Managing the selection process for architects and other project consultants
- Establishing and managing the project schedule and budget
- Reviewing the design documents for -constructability
- Conducting the value engineering studies
- Packaging the bid documents prepared by the Architect
- Maintaining the record of construction-related decisions
- Maintaining the cash flow schedule for the project
- Supervising the project construction and processing progress payment requests from the Contractor
- Organizing and conducting the final list for construction completion





- Preparing the operations manual for equipment warranties

As the agent of the Client (Funding Unit), the CM can be assigned many other tasks. In effect, the CM serves as a staff extension to the local jurisdiction for the duration of the design and construction process.

### **1.6.2 Program Manager (PM)**

The PM can be an individual or a company that specializes in managing a capital project on behalf of a jurisdiction. The roles and responsibilities are similar to that of the CM, except that the PM usually has less responsibility for the actual construction of the project. Many jurisdictions will engage a PM even in the needs assessment stage to begin evaluating financing options as well as assisting the jurisdiction in the selection of Master Planners, Architects, Financial Analysts, Value Engineers, and even Construction Managers. Most firms that specialize in project management focus their expertise in organizing the many steps involved in a capital project for the jurisdiction rather than managing the construction phase. Some organizations can provide both project and construction management services.

The decision regarding a CM versus PM approach will depend upon the project's size and complexity, in-house expertise of the jurisdiction, local design and construction expertise, and budget. While the CM can be held liable for many aspects related to design review, such as schedule, budget, and construction quality, liability is not as easily assigned to the PM who organizes, more than manages, the Project Management Cycle.

### **1.6.3 Construction Manager/General Contractor (CM/GC)**

This project management approach combines construction management tasks with the actual construction of the building. The private sector uses this approach more frequently than government since the selection of the Contractor (CM/GC) is based upon qualifications and not low bid price. However, the CM/GC approach is gaining popularity with governmental agencies by requiring that the CM/GC bid the sub-contractors who, in total, normally represent the largest portion of the construction price.

In the CM/GC approach, the jurisdiction solicits qualifications from firms that have the expertise to guarantee the construction price through participation in the project from inception (design) through to completion. The jurisdiction can require the delivery of the Guaranteed Maximum Price (GMP) at any stage of the design process, but the earlier the delivery the more "cushion" for subsequent changes will be included in the GMP.

The main advantage of this approach is that the Contractor and the Architect are at the table at the same time. Choices on building methods and materials are made collectively between the CM/GC and the Architect. This can yield significant savings in cost and time. The disadvantage is that the Contractor is essentially selected based upon qualifications and not price and that the Architect potentially loses some of the control of the design. The liability umbrella includes both the Architect and the CM/GC.

These examples are simplified explanations of options available to manage a complex process of design and construction. Many jurisdictions construct a project management that is a hybrid of these three options. Ultimately, the choice should be based upon the availability of project management expertise in-house. Regardless of whether this expertise is assigned from within the government or chosen from the private sector, the steps in the Project Management Cycle will need to be completed effectively and efficiently.

It should also be noted that some jurisdictions are cutting their capital costs by purchasing materials directly and "on-site" via electronic requisitions. At the construction site, a computer is connected with the purchasing department. The construction manager orders what he needs but is doing so on-line using the jurisdiction's accounts. This eliminates the mark-ups or administrative costs that private companies pass



on to the government. It also allows the contractor to take advantage of the jurisdiction's price agreements with its suppliers and avoid sales tax.

Of the CMs, PMs, and GCs, only the General Contractor is licensed or certified by the State. All three groups have professional organizations that grant some certification for completion of study programs or tests. Some of these are the Association for Project Managers and the American Institute of Constructors. The website, [www.constructioneducation.com](http://www.constructioneducation.com), has an exhaustive list of and links to many of these types of organizations. In addition, most county or local purchasing departments have information on local or regional groups.

## **1.7 FINANCING OPTIONS**

At some point it will be necessary for the funding agency to make an appropriation to cover the committee's expenses and early project planning costs, including the possible employment of planning consultants and an architect. This will ensure that the committee will have the necessary professional assistance and that its preliminary work will provide a sound basis for determination of the best alternative to pursue.

Early in the process, a preliminary project budget should be prepared. Construction estimates are needed during master planning to evaluate different options and again once an implementation plan is adopted. A more detailed cost estimate will be necessary in order to secure financial support for the project. Unless the funding authority or project management team has the necessary experience with cost estimating, a cost consultant should be hired for most large projects.

There are a variety of financing options available for capital projects involving either the public or private sector. Choice of which payment method to use will involve the length of the construction project, the political viability of public funding (which often involves passing a referendum), and the expected life of the building. This section will discuss both the public and private means of financing court buildings in Michigan.

### **1.7.1 Public Financing**

The traditional role of government is to provide services that are necessary but not viable in the private sector. Judicial services fall into this category, and courthouses are an integral part of providing justice. Public funding has been the tradition with courthouses and other public sector capital projects. This section will explain the two prevalent methods of financing large capital projects through the public sector—bond issue (pay-as-you-use) and taxes (pay-as-you-go). A description of the various types of bonds and taxes is included.

#### **1.7.1.1 Bonds (pay-as-you-use)**

Bonds are one of the preferred methods of funding capital projects, for a variety of reasons. Participation in the purchase of bonds is perceived to be voluntary—those who wish to purchase can, and others don't have any obligation. Bonds also provide a means for funding projects within a relatively short period of time up front by borrowing the cash, which permits future users to repay the loan through taxes or fees. This last feature makes bond issue the preferred method of funding capital projects, since users often do not realize they will bear part of the cost of the construction in the future. A bond referendum is thus easier to pass than a tax increase (pay-as-you-go).

An additional benefit to the bond issuer is that the interest earned on state-local bonds is not taxed by the federal government. This means that the interest rate can be lower to provide the same return to borrowers



as taxable bonds of other types. State and local governments, therefore, have a lower total cost from issuing bonds due to an effective federal subsidy created by the tax-free status of most municipal bonds. These bonds may still be taxed by state income taxes. Typical practice is for states to exempt the interest earned on bonds purchased by in-state residents.

Steps to issuing bonds:

- Engage bond Counsel to oversee the legal steps prior to selling bonds
- Obtain project estimates and determine amount to be borrowed
- Obtain government credit rating from Moody's or Standard & Poor's
- Engage financial advisor and/or underwriter to prepare documents and broker the sale

Purchasers of these bonds have historically included (in order of increasing percentage of purchase) banks, property and casualty insurance companies, individuals, and mutual funds.

*1.7.1.2 General Obligation Bonds*

Governments may use revenue from any tax or charges to pay the interest and repay the principal on General Obligation Bonds. Government promises to do what is necessary (raise taxes or generate fees) to generate funds if sufficient funds are not available to repay the bonds in the future. The value of these bonds is secured by the full-faith and credit of the government, which is obligated to meet the debt-service requirements and fully repay the loan. Governments can only default on repayment by declaring bankruptcy.

These bonds are typically considered to be a secure investment with low risk. As such, bond rating agencies will generally rate General Obligation bonds higher than Revenue Bonds (see below), meaning that General Obligation bonds can be sold at a lower interest rate than Revenue Bonds.

General Obligation Bonds accounted for 30% of outstanding long-term debt in 1991 and 31% in 1993.

*1.7.1.3 Non-guaranteed Bonds (Revenue Bonds)*

These bonds are guaranteed based only on the revenue received from a specific source. If the revenues are not sufficient, the bondholders suffer the loss. Common examples include funding a bridge with tolls or funding college dormitories with students' housing payments. This would likely not be an appropriate method for funding court facilities, since users cannot be charged for courtroom use. Traffic fines or other fines could be used to raise revenue for repayment of General Obligation Bonds but would not likely be sufficient to back non-guaranteed bonds in the amount necessary for courts construction.

**1.7.2 Taxes**

Taxes are a commonly used revenue source for state governments and increasingly for municipal governments as well but are most commonly used for operational expenses. If used to fund capital projects, taxes must be collected and saved ahead of time to accumulate sufficient cash to fund the project. In some counties, the County budget provides for a regular cash surplus similar to the concept of a "rainy day fund" in personal financial management. When capital investment is needed, the cash is available. This is not a common practice, primarily because most jurisdictions with a sizeable budgetary surplus will increase



services to provide a better daily quality of life, knowing that large capital projects can be funded through debt.

A more common use of taxes to finance capital projects is the combination of Revenue Bonds and tax increases. Money is borrowed to fund construction, and future taxes (or fees) are used to retire the debt.

Several forms of taxation are available to finance capital project, but the two most-frequently used are Property and Sales taxes. The following summarizes the property taxing approach.

#### *1.7.2.1 Property Tax*

Property taxes have steadily decreased as a source of revenue at all levels of government from 1962 to the mid-1980's but have begun to increase once again in the early 1990's. This tax is generally disliked by citizens. Part of the reason for this dislike is the complexity of the property tax structure, which consists of multiple calculations and unique terminology.

The Market Value of a property is the amount for which it could be bought or sold. The Assessed Value is the value that will be taxed. The term mills is used to describe property tax rates (one mill is .1 percent). The Effective Rate of Tax is equal to the ratio of the tax to the market value of the property.

In some states (18 states in 1992), different types of property are assessed at differing rates. This is called classified property tax. Michigan is not one of these states.

As property values increase, increases in assessed values will create tax increases, even if the tax rates do not change. This permits governments to collect increased revenue without undergoing the political rigors of a tax rate increase. In order to avoid government simply accepting this type of "passive" tax increase as the unavoidable result of the actions of assessors, many jurisdictions have adopted "truth-in-taxation" procedures that require that property tax rates be adjusted after re-assessment so that the revenue is the same as in the previous year. If additional revenue is needed, public hearings and/or a vote may be required to raise the rate.

The funding of projects through increased property taxes provides an opportunity for voters to show support or disapproval of the chosen project. It also permits the possibility that years of planning may result in a project that cannot be funded, if voters refuse to support the tax increase. It is important in planning to fund the construction of a court building through increased property tax to determine ahead of time the probability of a referendum for increased property taxes passing.

Some trends reflect voter decision-making in voting for or against a property tax increase. Such a tax will be comprised of the tax on residential property plus the tax on non-residential (commercial and industrial) property. Although any tax on commercial and industrial property will ultimately impact consumers to some degree, voters may be more concerned with the direct impact of the tax on the property they own. If this concern prevails, when the majority of property within a jurisdiction is non-residential, landowners and voters may be more likely to approve the increased property tax on the assumption that the local businesses will bear the majority of the burden, while the citizens get a new courthouse.

Studies have shown that residents perceive the location of commercial enterprises within the community to be the result of many factors, including ties to the community. Industries, on the other hand, are perceived as more free to move if economic conditions become unfavorable. Voters take these perceptions into consideration in voting on property tax increases. This indicates that while voters will choose to increase the property tax in jurisdictions of high non-residential composition, there is a limit to the amount of increase they will approve.



The State of Michigan offers a property tax credit based on income, and an additional credit for senior citizens. This system was implemented in 1974. A 1985 survey found that most citizens evaluated the potential impact of increased property taxes without taking the available tax credit into consideration. In other words, the credit will lower revenue and payments from citizens but likely will not improve the possibility of the tax being approved by voters. (On the other hand, if a credit system has recently been implemented and voters are still feeling the impact of the credit, they may be more likely to approve a property tax than another type of tax, which will not be influenced by the tax credit. In Michigan, property taxes increased more in the two years following the implementation of the tax credit in those counties where the credit reduced property tax prices the most.) The credit situation should be taken into consideration in choosing this funding option.

### **1.7.3 Private Financing**

Private sector financing is increasingly common for public sector projects as private companies become able and willing to finance construction of public buildings. In some cases, public buildings are constructed to the specifications of the client agency but are owned by private firms. These methods of financing will be discussed in this section.

#### *1.7.3.1 Lease-Purchase*

In this funding arrangement, the facility is designed and built to the specifications of the tenant agency or agencies. Construction is financed by the construction company or other private source. The government then moves into the finished building as a tenant and pays monthly rent to the owner. Over a period of time, ownership of the facility can shift to the tenant.

#### *1.7.3.2 Certificates of Participation (COPS)*

Certificates of Participation (COPs) are similar to tax exempt Lease-Revenue Bonds in offering an opportunity for private citizens to purchase an interest in the capital project without the governmental agency incurring any taxes. The COPs are issued by a non-profit entity established by a state or local governmental agency. Because the agency is a non-profit and thus tax-exempt, the debt can be repaid at the lowest possible rate.

When COPs are used, the non-profit agency issuing the certificates holds ownership of the building until the debt is repaid (or for a contracted period of time). Construction is financed through this agency from the COPs revenue. Interest accrues on the Certificates during the construction period, but no principal payments are made.

After construction is completed, the Courts and other tenants make appropriate lease payments to the non-profit agency, which then begins to repay the COPs or Bonds (with interest) through the debt redemption/construction fund augmented by lease revenue. Because the rating on the COPs is guaranteed by the state or local government's credit, that government entity is under obligation to redeem the debt through the non-profit organization's debt redemption fund or by legislative act (tax revenue) if necessary.

This method of financing public projects has been used extensively in many states but less frequently for judicial facilities. Repeated attempts were made to determine the frequency of use in Michigan, but most government officials at the State level were unfamiliar and uncertain as to the legality of COP's in Michigan. Counties have been the predominant users of this alternative method of financing in other states and a comprehensive review of the feasibility of use for county-sponsored construction programs would be wise if public financing options are not available.



## **1.8 CONCLUSION**

Many court planning projects do not meet the expectations of the Owner and/or Users largely because of inadequate front-end planning and a poorly managed design process. Good architecture is, in part, due to good clients and good clients are well informed and organized to manage the process from start to occupancy. A courthouse is a complex enough building type so as to require consistent oversight and control by an informed group that can devote significant time to the effort.

In this chapter, the initial steps from needs assessment to defining the architectural program have been discussed followed by a presentation of the design and project management stages. While differing levels of expertise and commitment of time will be necessary as the project progresses, the more effective input by the owner and users from Needs Assessment through the Schematic Design Phase of the architectural services the more successful a project can become. With the importance of the project understood by the recommended Project Advisory Committee, the actual design choices that will be explained generally in Section 2 and in greater detail in Section 3 which acknowledges operational, financial, and functional opportunities.